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Electricomics: A Digital Comics Publishing Ecosystem

Research & Development Report

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For more information about its projects and digital R&D stories from around the world, visit Native: Magazine of the Digital R&D Fund for the Arts at artsdigitalrnd.org.uk or connect with us on Twitter @digitalrnd or using the hashtag #artsdigital.

Contents

Executive Summary

Background

This report documents Electricomics, a Digital Comic Self-Publishing Ecosystem funded by the Digital R&D fund for the Arts. The project looked at how digital technologies affect and enhance the tropes and methodologies of the traditional print medium, and created a user friendly content creation tool for use by comics practitioners and arts organisations alike.

Orphans Of the Storm, headed up by writer Alan Moore and Director Mitch Jenkins, worked with Brighton based App Development Company Ocasta on the app, and with Alison Gazzard at London Knowledge Lab, and Daniel Merlin Goodbrey at the University of Hertfordshire as research partners.

The Project was conceived during another OOTS project, where it was necessary in the scene of a film, to have a digital comic being read on a transparent scroll. OOTS are an idea-led company, who pursue an idea into whatever medium or field it leads them. Moore wanted to make the comics for the film, but more than that, he wanted to make a completely new way of making and reading comics.

The team assembled all had a passion for emergent technology, and a strong desire to find a new solution to the almost thirty year old question of how to put comics onto a screen.

The Project

Over the months that followed, the Electricomics team examined the existing history and current marketplace of Digital Comics, the inherent structures and tropes of Analogue comics, and how they might best create comics specifically for the screen, as opposed to translating paper comics onto it.

The Process

1 **The Creators:** The team commissioned four stories from four writers, as a sample study from which to begin their research. From the four scripts that were handed in, four artists took over translating the scripts into art.

2 **The Build:** Ocasta took the art and began writing the code that enabled the comics to be truly digital native. Panels and pages became assets to be reassembled by the Electricomics App on demand.

3 **User testing sessions and Workshops:** At the same time, User Testing sessions were held to ask creators what they would want from a creator tool. What functionality would they need, in order to be productive?

Once a build was made, User testing sessions were held with comic readers, creators and students.

4 **Market Review:** The team examined other similar products and compared their main selling points, and usability.

What would make the app uniquely useful, and make it stand out from the rest?

What were the emerging ideas and exciting leaps forward being made in Digital Comics?

What functionality could it have that would open digital comics up to a broader group of users?

5 **Code Library Assembly:** As Ocasta worked on the comics, it also began compiling the library of Javascript which would allow users of the comic creation tool to make their own comics, with all the functionality of the four main comics. The code would be released with a public license to make the creator tool able to be modified by its users, and for the 1.0 version to be improved by a crowd-building process.

6 **The long and winding road of development:** The production process was a lengthy one, with all the stages of traditional comic production augmented and modified by the requirements of the technical process. The comics produced were each unique, and each pushing in a different direction. To do one of them well, would be a challenge, but to do four would be incredibly hard.

Results

The outputs from the project are:

1. The Electricomics App, available to download to iPad. http://tinyurl.com/electricomicsipadapp

2. Four professional rich content digital comics, by some of the top creators in the current comic industry which use digital to further the storytelling, and not just the art.

3. The Generator, a free downloadable Open Source comic creation tool for desktops, which users can put their art files into, and which generates .elcx files which the app will load. http://github.com/electricomics/generator

4. A website which acts as a hub for all the arms of the project and a central library for all the links to comics made by other people using The Generator, our comic creation tool. http://Electricomics.net

5. An Open Source Code Repository where all the code for the Generator, and code snippets from the professional comics is stored. http://github.com/electricomics

6. A social media presence established to cross promote the comics made by our users, and direct them to useful sources of information in the field of Digital Comics. @electricomics and http://facebookcom/Electricomics

7. A set of Guidelines, created to help users when making their own Electricomics.

8. This Research Report, documenting the whole process.

9. The Comic Electric, A Digital Comics Symposium- Held at the University of Hertfordshire on October 14th 2015, with Electricomics giving the keynote and 12 other papers from leading speakers in the field.

10. Youtube archive of footage from The Comic Electric.

11. A Digital Comics Research mailing list to continue the discussion and provide a hub for practitioners and theorists alike.

Insights

- That making digital comics is expensive, per page, in terms of developer time, so anything that could be done to reduce that expense, for us, or our users, would be of benefit.
- That less is often more, in terms of what makes a digital comic effective. One thing we heard over and over was that readers did not want to be overwhelmed with digital effects.
- That creators will adopt a platform if it is easy to use, if it is unlikely to be withdrawn from the market anytime soon, and if they can maintain control of their content.
- That a publisher model, with revenue to gather, and overheads to meet, is not possible within the scope of the project, and perhaps that speaks about publishing trends in general, and maybe concentrating on enabling others to self publish might be of more benefit in the long run.

Future

- We have set up a Community Interest Company so that Electricomics is run for the direct benefit of the comics creation community. Any profits made will be ploughed back into the company and only into things which will benefit the community directly.
- The immediate next phase of the project is building the library and the audience of the app. Encouraging people to make comics and read each other's comics in the app, and to grow the readership.
- The next phase financially, is looking for secondary funding to advance the Generator, and the 2.0 version of the app. The plan is to push onto Android and expand into the non-iOS market as soon as we can. Overwhelmingly, we have been asked for an Android version. Interest is incredibly high.

Background

The Partners

Orphans of The Storm was set up by Alan Moore and Mitch Jenkins when they began their series of short film projects several years ago. Moore & Jenkins have a work ethic which determinedly places control of the product in the hands of the creator. They do not believe that the big established studios and publishers value the work that a creator puts into a piece of art, or film as much as the creator does. They believe that creators should ideally be able to make sell and profit from their work without a third party being involved. This was their standpoint on the films they made, and what they wanted to achieve for Electricomics.

Ocasta is an app development company based in Brighton who make a wide variety of apps from the Virgin Media Wifi Buddy, to Harvey's beer finder. An agile and tenacious company they relish a challenge, and saw an opportunity to make a comics app which would benefit from them not being entrenched in the comics industry. They could bring a fresh eye to the challenges posed by digital comics.

Alison Gazzard is a researcher and lecturer of interactive media. She has a BA(Hons) Software Systems for the Arts and Media, an MA 3D Animation and completed her PhD in video game cultures and design in 2009.

She is currently employed as a Lecturer in Media Arts and Education at the London Knowledge Lab, UCL Institute of Education, UK where she is the Programme Leader of the MA Digital Media, Culture and Education and is a member of the DARE collaborative. She also volunteers at The National Museum of Computing on the site of Bletchley Park.

Daniel Merlin Goodbrey is a senior lecturer in Interaction Design at The University of Hertfordshire in England. A prolific and innovative comic creator, Goodbrey has gained international recognition as a leading expert in the field of experimental digital comics. His smartphone app, A Duck Has An Adventure was shortlisted in the 2012 New Media Writing Prize. His comics can be read online at http://www.e-merl.com

The History of Digital Comics

The form of comics has developed primarily within the bounds of the printed page, where it exists today in a variety of different formats ranging from serialised newspaper strips and comic books to longer collected editions and graphic novels. Rather than one all-encompassing comics industry, these formats are the product of an overlapping group of smaller industries, each with their own traditions, audiences and economics. Over the course of the last thirty years, the rise of the computer and digital display has opened these industries and audiences to new avenues of creation, distribution and consumption.

Initially, the form's colonisation of the digital domain came via the world of videogames, with the appearance of early hybrids such as the hypercomic adventure game Redhawk (Silhouette Software 1986). At the time such comics were still, as McCloud notes in his seminal Understanding Comics, 'the territory of games and strange little experiments' (1993). But by the year of Understanding Comics publication, a more profound change was already underway. The addition of inline image display to the Mosaic web browser in 1993 contributed to a massive surge in popularity for the World Wide Web, with web use growing by a factor of 341,634% (Campbell 2006: 15). It also lead to the emergence of the first webcomics; comics created specifically for digital display and distribution via the web (17). As the web grew in popularity through the 1990s, the webcomics scene expanded and matured, bolstered by a rapidly expanding community of new readers and creators.

The web offered creators an opportunity to reach a widening audience of readers without incurring the prohibitive production costs of publication and

distribution associated with print (17). By the early 2000s a dominant model for webcomics had begun to emerge, based around regularly updating, creator-owned serials. These were typically presented as horizontal strips of three to four panels, similar in format to that of daily newspaper comic strips. While these webcomics were presented to readers free of charge, creators of popular series were able to generate income via advertising and merchandising.

Warren Ellis and Paul Duffield's 'Freakangels' was a free weekly webcomic that explored a large cast and a complex story over several hundred pages of comic, and which sold well as collected volumes or Graphic Novels, and also sold a lot of limited edition merchandise.

Danielle Corsetto's Girls With Slingshots ran for ten years as a weekly free webcomic, and which she has collected into eight volumes, and which you can buy T-shirts and prints from.

For the last decade or so, the internet has meant creators have had a cheap way of getting their work out there and building an audience. But even as this format became established, a new wave of webcomic creators emerged who were determined to further explore the potential of the digital medium (33).

Today, digital display is an increasingly popular mode of consumption for the form of comics. Portable touchscreen devices such as smartphones and tablet computers have provided a single platform of consumption for comics, film, animation and videogames. Traditional print comic publishers had been wary of making the leap to the web and were reluctant to adopt the "free content" business model established by creator-owned webcomics. But the prevalence of touchscreen devices and an increased acceptance of paying for digital content has led to a significantly different publishing landscape. As a result, the larger comicbook publishers have moved to embrace digital formats, both as an avenue for additional income and as an outreach to new audiences.

More recently, many leading digital comics services primarily aim to offer a reading experience that replicates traditional comicbook forms on a tablet or smartphone device. This approach, although valid, raises questions as to what features of print based comics need to be retained in their translation to the digital form and what can potentially be changed. An important

consideration in this regard is the concept of the page itself. In comic books and graphic novels, pages are particularly significant units. A useful definition of the page comes from Charles Hatfield (2009), who observes that:

> 'The “page” (or planche, as French scholars have it, a term denoting the total design unit rather than the physical page on which it is printed) functions both as sequence and as object, to be seen and read in both linear and nonlinear, holistic fashion.'

In setting out to create native digital comics, retaining the concept of the page gives comic creators a useful unit of layout with which they’re already intimately familiar. In traditional comic books, stories are built around the turn of the page, which allows creators to delay the delivery of punch lines or craft moments of surprise or suspense within their narratives. The page also serves to presents the panels it contains in fixed juxtaposition with each other, allowing for both linear and nonlinear reading as outlined by Hatfield. This simultaneous juxtaposition of images is identified by many prominent comic scholars as a key aspect of the form (McCloud 1993, Groensteen 2013, Miodrag 2013).

In general, the development of digital comics has seen the page change alongside other digital media to become more “plastic” (Murray 1997) and mutable. Panels can be delivered individually to the screen and their contents altered individually, rather than as whole-page units. This allows surprise and suspense to be achieved in the individual delivery of panels or for narrative effects to be created from the rearrangement or alteration of existing panels (Goodbrey 2013). Although it's important to also recognise that the more these effects are relied upon, the more they weaken the fixed simultaneity of images and the potential for non-linear reading.

It is also important to consider the page within the larger context of the multipage format. Traditional, printed comic books and graphic novels have the quality of flippy-throughiness' (Nichols 2013). Due to the nature of their construction it’s easy to flip forward and backwards through the pages and the physical location of all the information in the comic remains fixed and constant. Digital pages by the very nature of their lack of fixed physical structure, erode the quality of flippy-throughiness. The more a digital comic embraces the mutable nature of the screen and seeks to control the individual display of panels, the more markedly this erosion can be observed.

One approach to the challenge presented by the lack of flippy-throughiness in digital comics is to embrace McCloud's concept of the **'infinite canvas'** (2000). In an infinite canvas comic, all the panels in the network are given a fixed spatial relationship on one large plane or canvas. The screen then acts as a window under the reader's control, which can be moved around this plane in order to read and navigate the comic. This gives the reader a fixed spatial configuration or shape to hold in their head and full control over their progression and place within the network.

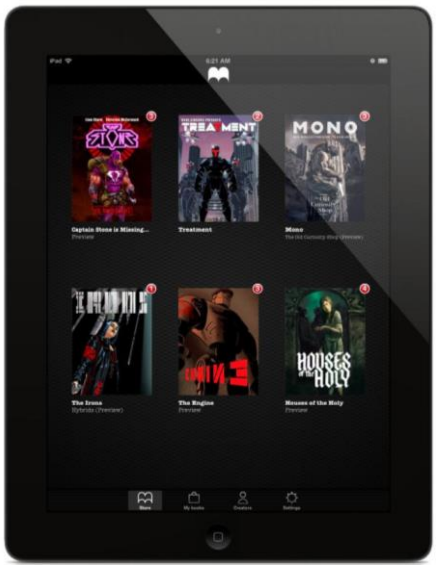
Making use of an infinite canvas approach to creating digital comics can be problematic, in that it diminishes some traditional page layout techniques and can be problematic in terms of costing and production nomenclature. But within the physical limitations of a digital environment, the infinite canvas perhaps best captures the spirit of how a multi-page work is traditionally read, explored and flipped-through.

The Digital Comics Market

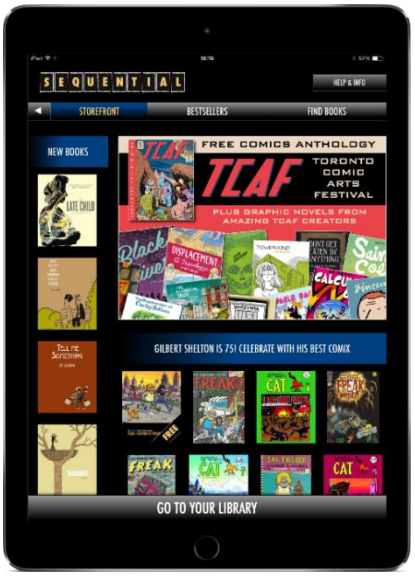
Only a short time ago, digital comics did not seem to be a growth market, but innovation in handheld devices have led to most publishers of print comics exploring the possibilities of digital.

Almost all the major comics publishers such as DC, Marvel, Image, Dark Horse, IDW and Dynamite either have their own app, or use one of the major distribution platforms such as Comixology or Sequential. These platforms publish catalogues of single issues, graphic novels, collections and bundles. These comics are sometimes what is known as a 'Motion Comic' where there is a degree of panel to panel animation, and sometimes completely static, with no added interactivity or animation, but have added extras in the way a DVD would.

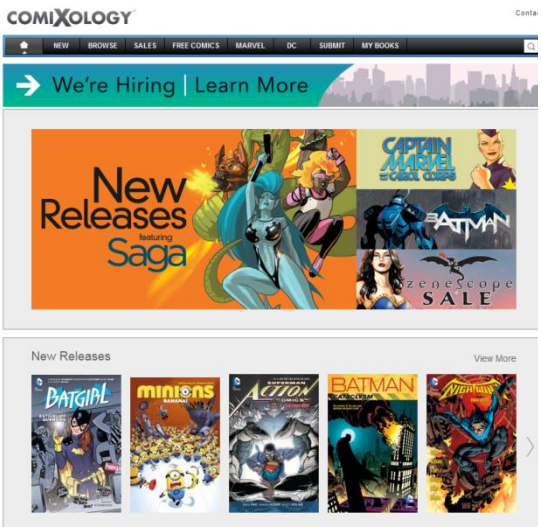
Creators often publish their work on their own websites, they can also put it up on sites like Deviantart, and create profiles on social media sites to market their comic, and interact with their audience.



Madefire



Sequential



Comixology

Bouletcorp.com

Many of the major digital comics publishers charge per episode, some of them utilise sites such as Humble Bundle to sell a package of lots of different comics at once, either for a fixed price, or for a 'Pay at least x' model. There

are also comics creators using Patreon, Kickstarter or Indiegogo to fund the self-publishing of their projects.

Some of these have been quite successful, but the plethora of different options open, and ways a creator can publish show that as yet there is no single method that has risen to become the industry standard.

There is more a rapid fermentation of ideas and techniques borrowing from other industries like BandCamp which is for musicians, or Etsy which is for crafts. What a marketplace looks like, and how it behaves is rapidly changing.

At the London Bookfair 2015, the e-publishing hall was vast, with delegates from all over the world including several parts of Africa, United Arab Emirates, India, Pakistan and many more.

Panel discussions covered every aspect of digital publishing, including the one that Electricomics took part in, along with Sequential, Self Made Hero, and Nobrow Press.

Russell Willis at Sequential talked about the digital comics market on their blog, shortly before LBF15:

> "The decision to commission the creation of a special app to showcase graphic novels was partly to make the comics easily accessible but was also a nod to the growing market for digital comics and graphic novels which is estimated to be around $100 million dollars this year."

One cannot overstate the need, within the comic industry, for reliable, and affordable digital self publishing options. To get an idea of the amount of creators out there for whom a solid digital solution would be a priority, we can look to the Comic Book Resources.com 'directory of comic creators on Twitter'.

This uses the assumption that any comics creator with more than a passing interest in publishing digitally will likely have either a personal or professional twitter account, both to network with other creators and publishers, and to engage with and build their own audience and fan base.

We must of course assume that there are some comics creators who are on Twitter, but who only publish paper comics, and maybe use Twitter to drive their physical sales.

We must also assume that there are people who sell digital comics online, but who do not use Twitter. Add to this the fact that CBR cannot keep absolutely accurate records for their directory, and that as they mainly cover western, US based comics, they likely therefore omit the majority of creators from non-uk Europe, the middle east, Mexico, the Philippines, India, South America, Indonesia and the rest of the far east, who make up a large part of the global comic creator community.

Within the results of our own Market Research Survey, of the 846 people who responded, 171 of them, or 20.2% identified themselves as comic creators. Obviously the nature of our project might attract more creators to answer the questions than another survey might, but even allowing for that, the figures are still striking.

Since the project was announced, 30% of hits to the website are from users with a first language other the English. Slightly less users of the app have a non-English first language, which might be because the app is only in English, or because the Ipad is less used in those countries.

Comics is a medium not an industry

A crucial point is that comics are a medium and an art form, not just an industry. Many graphic novels and comics are made as reportage, as memoir, as political commentary, and as educational tools. This is why the project is of particular use to the wider arts sector.

A few examples:

Lovelace and Babbage is about the birth of computer science in the industrial revolution.

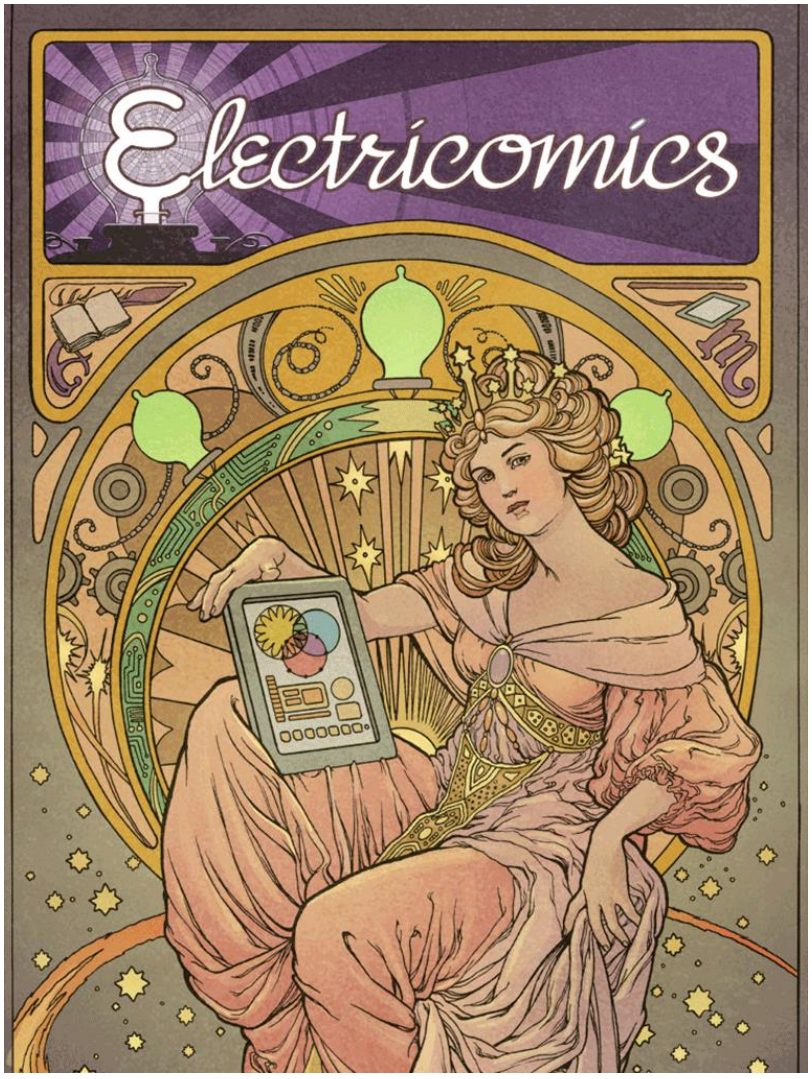
March, by Senator John Lewis documents his key role in the civil rights struggles in America during the fifties and sixties.

Meet The Somalis documents the stories of Somali migrants as they find new homes in cities across Europe. A profoundly moving piece of work, which re-humanises a group which are relegated to numbers and tabloid headlines, especially in recent weeks, at Folkestone and Calais.

Nicola Streeten's Billy, Me & You deals in an open and direct way with her grief at the loss of her son. Lighter than My Shadow by Katie Green, is a memoir of eating disorders in which very abstract emotional states are shown in pictures, letting the reader into her head.

Al Davison's haunting memoir Muscle Memory recounts his amazing survival against all the odds, cheating death and enduring the abuse of his father.

Gordon Shaw's comic 'Rick' assembles the reactions of his loved ones to his diagnosis with a brain tumour. Placing recollections next to Haiku, and postcards next to poems, Shaw is turning his diagnosis into a collaborative celebration of not just his, happily continuing, life, but of all the people around him, and their connection to him.



The Project

The project set out to explore how digital technologies can change and enhance a traditional print based medium through the development of an adaptable and easily accessible toolset aimed at creative practitioners in the wider arts sector.

To do this, we set out to understand:

- The current state of digital comics
- The relationship between comic writers, artists and technology partners in the creation of digital comics (more specifically in identifying a common language that could be used amongst members of a comic creation team)
- How digital technologies might affect reading, navigation, interaction and storytelling in digital comics
- The key features that needed to be provided by a comic creation toolset for use by comic writers and artists
- The current digital comics market for future business models, including how people purchased content in relation to possible funding and subscription models

Key Steps

Identifying Terms and Concepts

From the start, we knew we must identify the key features and components of a digital comic.

This was especially vital to Ocasta, for whom the labels were not simply a way to think of a particular part or concept within the project, but actually terms they would build into the code to enable it to construct and modify the comics they needed it to create.

Words such as **'Page'** or **'Panel'** seemed redundant if the comic could be one single huge **canvas** instead. Or if it could be a single long image with no divisions between what one might call panels.

There was a strong push toward going beyond the terms associated with the print form of comics and adopting new words to indicate the various parts of the comics.

Words like **'Step'** and **'Scene'** were suggested as replacements for **Panel** and **Page** so that the engineers could refer to each panel as a step, and the code would have a series of nested terms which they could use to bracket the various parts of the story.

The creative team found this problematic, because in order to commission a comic from a writer or artist or colourist, you have to give them two pieces of information, the number of pages you need, and what rate per page you will pay them. Even if the comic is eventually going to be a long string of panels, or a huge single image, you will need to know how many pages of print comic that represents.

This was indicative of a key tension throughout the project, which was that comic creators have methodologies and processes, and a pipeline of work, which has been unchanged for almost a century. The comic page with its attendant terms and structures is the framework on which the medium hangs. All the creators involved understood that there were comics out there online that escaped the restrictions of print, but when it came to writing their own scripts, all of the writers used a full comic page as the basis for their stories.

After much discussion, the team agreed to keep the terms they knew, for talking about the comics, but that for the build, Step would serve to denote an individual image or object, from which you transitioned to the next image.

See the Glossary for a complete list of keywords and their meanings.

Who Owns What?

It was decided right from the start, that although Orphans of the Storm would retain the copyright to the actual comics we produce, and the associated IP and assets, they wanted to keep the whole project and process as transparent as possible. Ocasta suggested that one way of giving the users of the App and the creator tool the maximum benefit once the project was complete, would be to make it all Open Source.

> "In production and development, **open source** as a development model promotes a universal access via a free license to a product's design or blueprint, and universal redistribution of that design or blueprint, including subsequent improvements to it by anyone."

So whatever stage we progressed our software to by the end of the project's remit, we would then allow anybody to see the code, alter and change it, add functionality to it, and improve it. We would add those functions to our own version, and allow that to be improved on. This would give the project a longer lifespan, and make it a community effort, where the people who needed to use it, could respond and help improve the software without waiting for further development phases, or further funding.

The Comics

We commissioned four scripts, each very different, to test our and the public's understanding of how digital comics could be read, structured and made. We would then go through each step of making a comic, before handing off to Ocasta who would use the assets to build each comic individually. Once the comics were ready, we would use the functionality created for the comics, to create the basis of a comic creation tool, which the public could use to make their own comics.

The four commissioned comics were as follows:

Big Nemo: This story follows Nemo, the hero created by Winsor McCay through slumberland, but it is not how he remembered it, and not how we remember it! Written by *Alan Moore*, and drawn by *Colleen Doran.*

Big Nemo

Sway: This Science Fiction story uses the accelerometers in the iPad to tilt the character forwards and backwards in time. if you read the story by

swiping, you get four pages, but if you tilt, another four are there waiting to be read, and the story comes to life. Written by *Leah Moore and John Reppion,* and drawn by *Nicola Scott*.

Sway

Cabaret Amygdala Presents: A horror comic in the beloved tradition of EC titles like "Shock Suspense Stories" and "Tales from the Crypt" where nothing is what it first appears, and there is more than meets the eye.. Written by *Peter Hogan*, and drawn by *Paul Davidson*, this story is Multi-Cursal, in that you can read it in whichever order you like, and it will still make sense.

Cabaret Amygdala Presents

Here the radio and the television are the buttons you can click to choose your path through the story.

Red Horse: This is a story from *Garth Ennis* and drawn by *Frank Victoria*, both men with an eye for period detail, it is set in the First World War. The story is told plainly and simply, but reading between the lines, a much larger and profoundly affecting story emerges. Sometimes, the story is so good, it doesn't need anything else to enhance it.

Red Horse

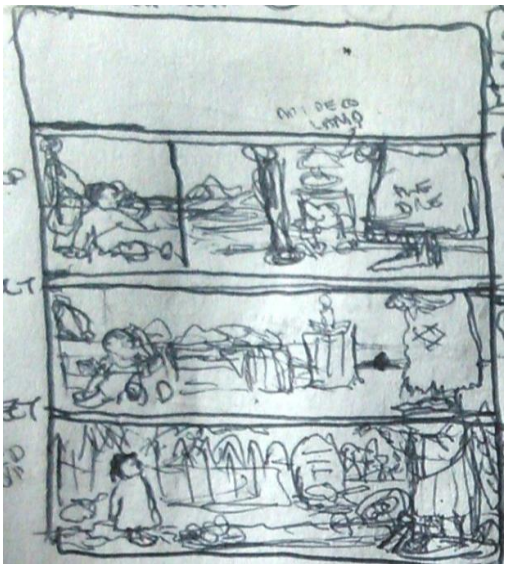
The Production Line

The process of making a comic can be incredibly simple, if you want to just sit down and draw one. You can do all the tasks yourself, laying out the page, drawing the art, and then adding the balloons at the end. If you don't feel you can do every part of it, you will need to find people who can fill those roles for you.

In professional comics, unless somebody is a great all round writer/artist letterer (Bryan Talbot and Al Davison are good examples) then you need a team.

For Electricomics we used people we already knew and had worked with before, so we could be certain they would be up to the task of doing comics in an unusual format, or production order. As it transpired, every part of the process was complicated by the specifics of the project. See

Acknowledgments and Credits for a full list of who had a hand in the project.



The writer creates a script, sometimes just from notes, or sometimes from rough sketches of the page called thumbnails.

This thumbnail for Big Nemo shows that Alan Moore planned his page out as a traditional comic page, even though he knew he wanted the panels of it to only be visible one at a time.

Below, we can see Moore's script for the first two panels which features directions for the artist, as well as sound directions, and also what transitions there might be for the balloons and captions.

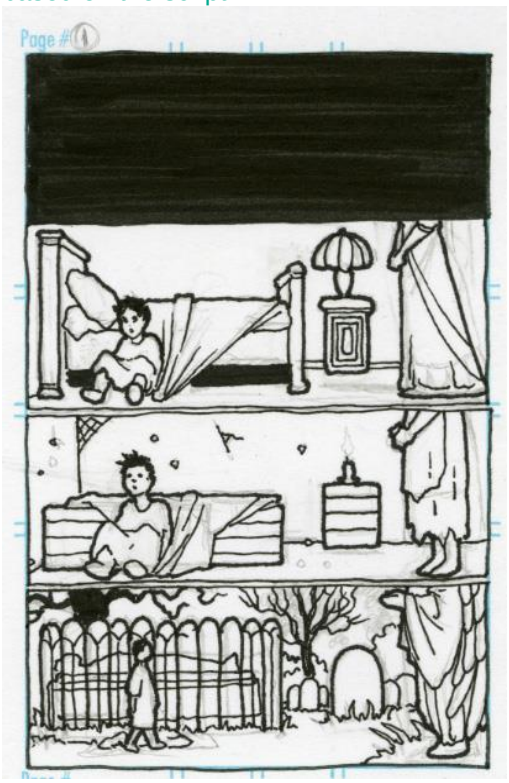
All the writers had to make the choice of what to direct and what not to. They mostly put in a 'wishlist' which they were happy to see pared down, as the practicalities of those things were weighed against the time frame of the project.

PANEL 1.
In the blackness, we have SOUND F.X. of gentle snoring and whistling, bedroom ambience.
After a second or two, the first caption appears up towards the top left corner of the top quarter-page space on the screen. The caption is reversed-out white on black, and is in a suitably fancy 1920s font.
CAPTION: NEW YORK, 1929.

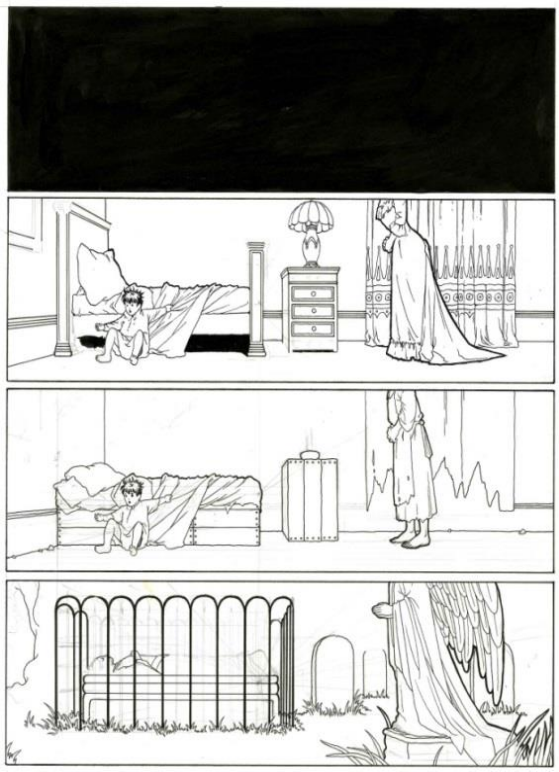
PANEL 2.
After a moment, the caption fades from sight. On the SOUND F.X. we have the snoring and whistling suddenly cease in the sound of a child falling out of bed and clattering to the floor.
Then, in the lower left quarter of the bottom panel-space, we have a standard small black and white line image of McKay's Little Nemo having just fallen out of his bed, which we see the top part of directly behind him. He sits on the floor beside the bed, rubbing his tousled head and looking surprised. After a second, his word balloon appears.

NEMO : OH, MAMA, HELP! THAT WAS A BAD DREAM FOR SURE

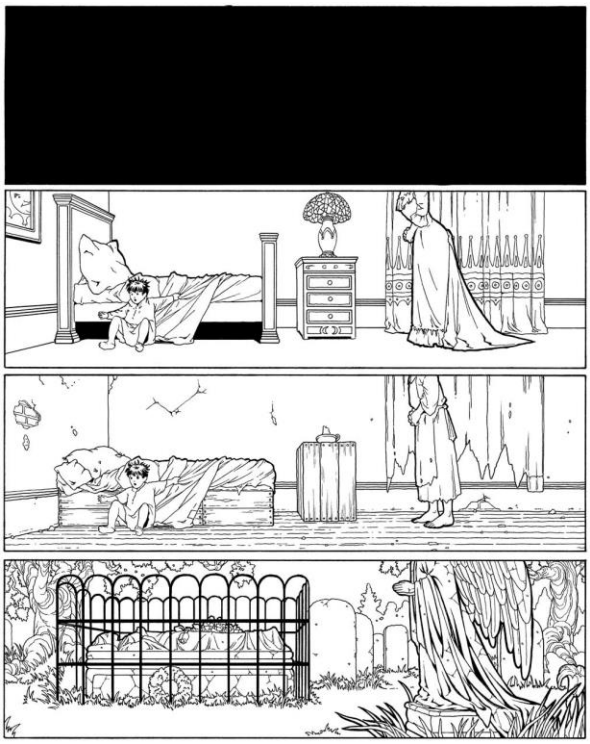
This is artist Colleen Doran's thumbnail sketch based on the script.



This is her pencilled page with the first ink on top .

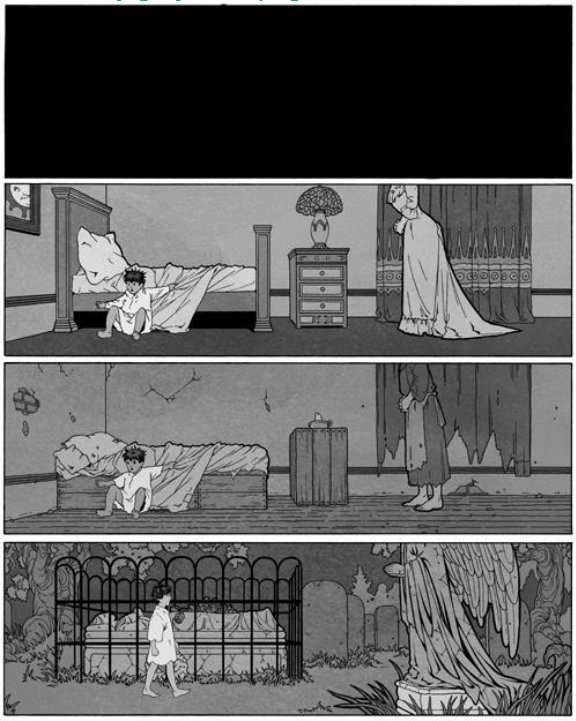


The completed page of inked art.

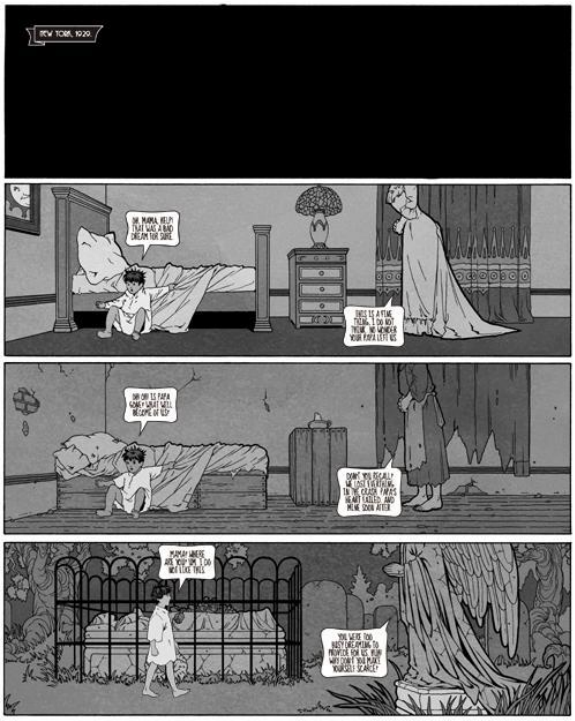


The flat colour stage, where elements of the page are separated out for colouring.

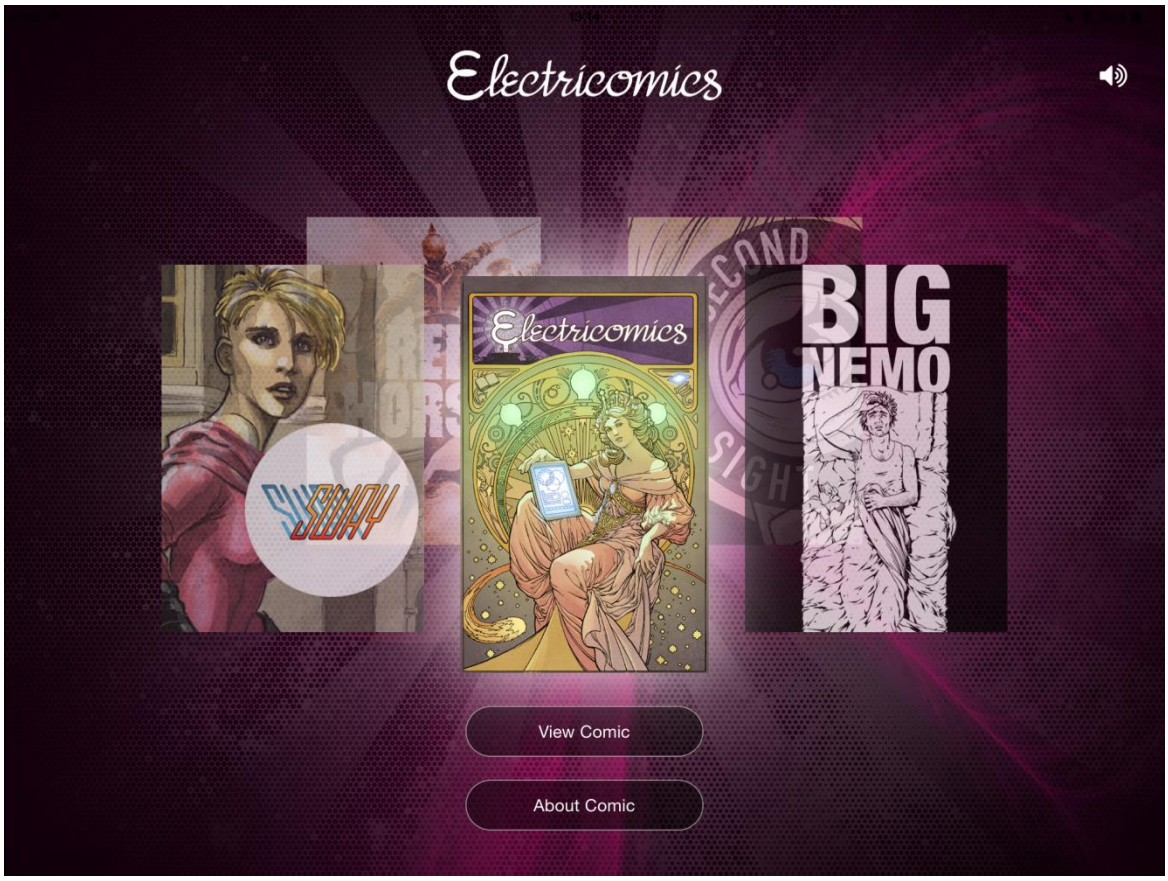
The ‘coloured’ art, which in this case was a deliberately greyscale page.

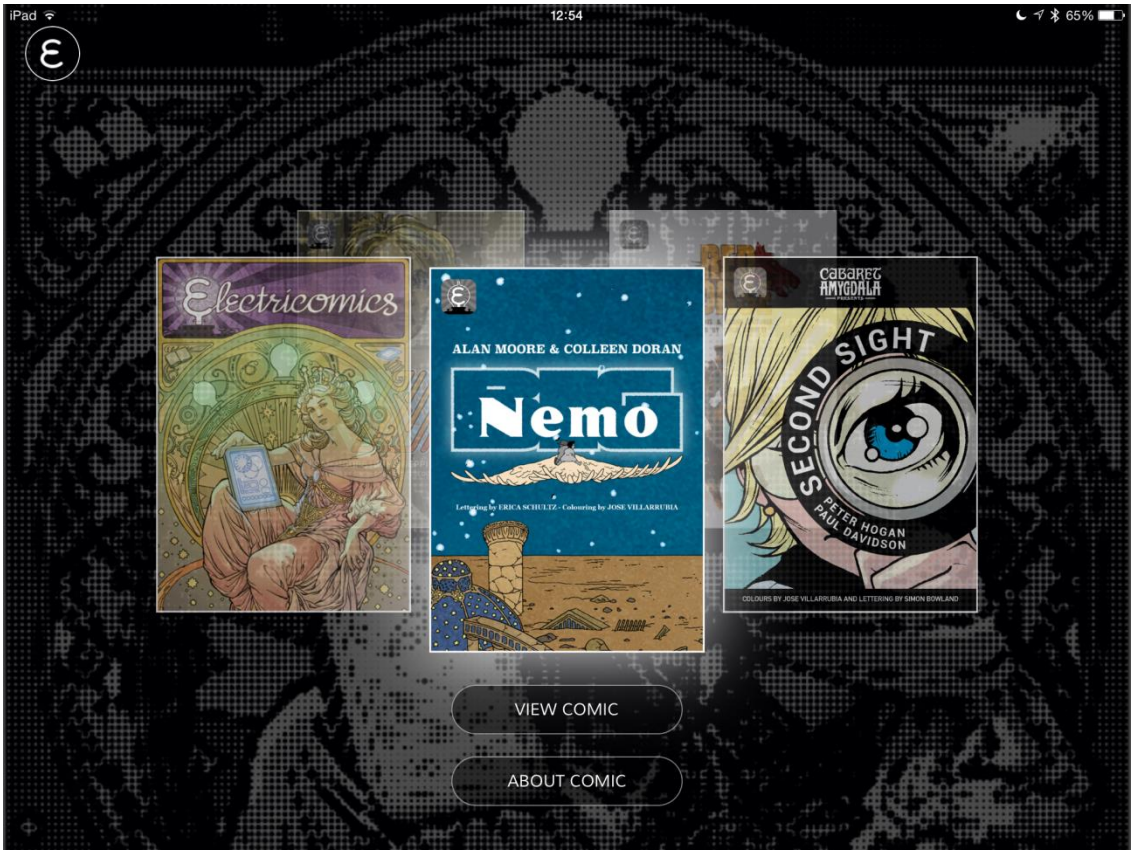


The final page, with lettering layer over it, which can be put into the build, panel at a time.



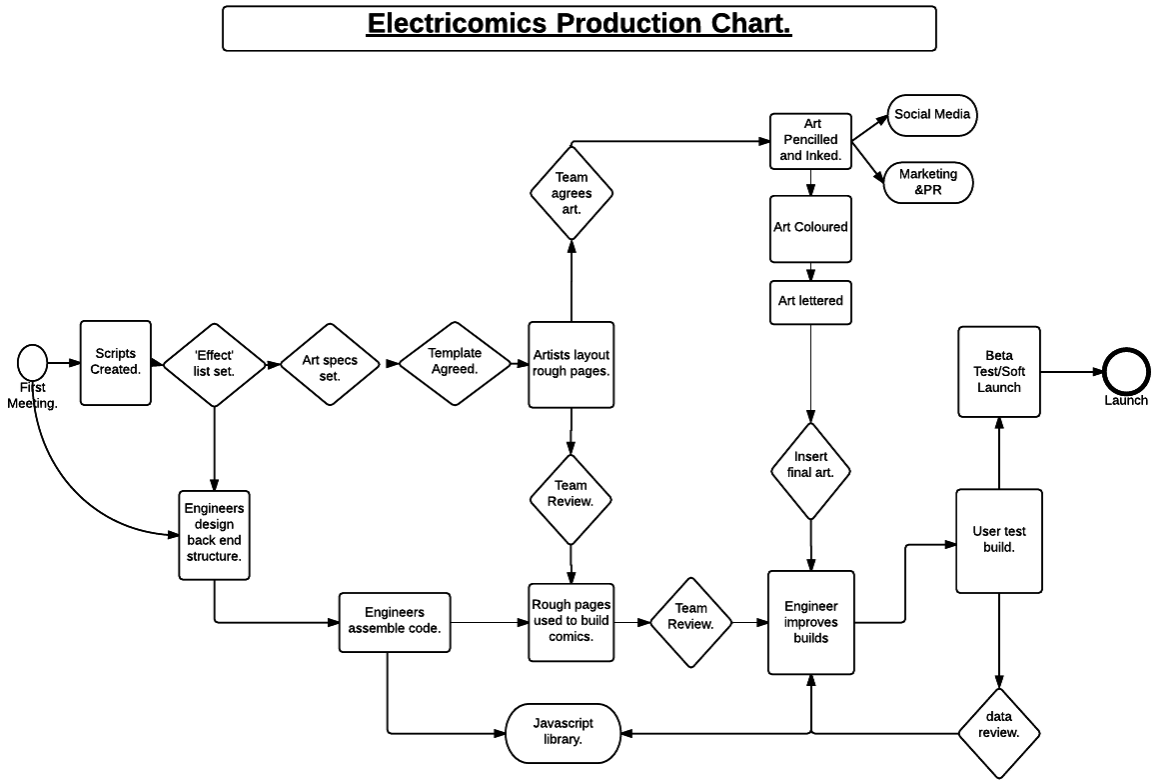
The first build of the app shows the first proposed cover for Nemo.




iPad
12:54
65%
Electricomics
ALAN MOORE & COLLEEN DORAN
Nemo
Lettering by ERICA SCHULTZ - Colouring by JOSE VILLARRUBIA
Cabaret Amygdala
SECOND SIGHT
PETER HOGAN
PAUL DAVIDSON
COLOURS BY JOSE VILLARRUBIA AND LETTERING BY SIMON BOWLAND
VIEW COMIC
ABOUT COMIC


iPad
16:48
asset1.basecamp.com
100%
iPad
4:21PM
100%
ALAN MOORE & COLLEEN DORAN
Nemo
Lettering by ERICA SCHULTZ - Colouring by JOSE VILLARRUBIA
BIG NEMO
Once there was a little boy who had big dreams in a bright new century, but then the century grew older. And so did the boy. And so did the dreams.
AUTHOR: ALAN MOORE
ARTIST: COLLEEN DORAN
COLOURS: JOSE VILLARRUBIA
LETTERS: ERICA SCHULTZ
EDITOR: LEAH MOORE
ANIMATION: GIULIA
CONTINUE READING
START AGAIN
VIEW COVER

The work done on the information page helped unify the look of the whole app, as well as making it easier to use.



In order to determine what functions the comic creation software and the open source library had to have, each comic was initially created on a comic by comic basis.

This task became the last in the long pipeline of production. Comics already have many development stages, from pencilled pages, to the inker, and colourist finishing the art, and then formatting and lettering at the end. Normally this is it, and the pages go off to print, but with Electricomics it was just the beginning.

Instead of a single flat image, we needed each page to remain layered, so the foreground and background, and dialogue balloons could all be used as assets in the animation and assembly process. This was quite easy with something like Sway, where the figures are the only thing that needs to stay separate, but on Big Nemo, each panel had a large amount of detail.

One of the major challenges for the project was managing the file type and size and location for all of the assets and the preservation of a copy at each stage to fall back on in case of amendments. This was further complicated by the very varied approaches to art, and image management by all the many members of the team. Passing the various pages back and forth between the team became a dizzying task, and making sure at the same

time, that each stage had been done correctly, and that the output from that stage was what the next person along needed it to be.

Unsurprisingly someone who had none of those issues was Frank Victoria, our replacement artist on Red Horse. He did all of his work, from early roughs and layouts to final colours digitally, so he was able to format it, adjust things, and make it work all on his own.

Creators who are comfortable producing art entirely digitally, do not need to scan, resize, reformat and adjust their art. They can create pages of comic which are already the correct size, shape and resolution, and any changes can be made very easily.

This project has shown that it is completely possible for artists working in pen and ink to produce wonderful art, and from that great digital comics. It must also be said that the efficiencies gained by working entirely digitally, do mean a tangible benefit to every subsequent part of the production process.

Members of the public who are confident using graphics tablets, or other devices to make digital art, would likely be able to use the creator tool with no difficulty.

Those who prefer a paper page, and a pen, will still be able to create using our creator tool, but they will have the added process of manipulating their art once they have scanned it in.

Outputs

1. Four digital comics which address digital differently, and attempt to do something innovative with storytelling.

2. A reader app on which you read the comics on an iPad, and which acts as your library, and a publishing platform for both professional and amateur digital comics.

3. A server which will store the comics, and send them to the app.
4. A creator tool which will allow users to put their own art into it, and create a digital comic, which the tool will export as html and can be viewed in the app.

5 A library of Javascript code which will enable users to make their own comics using either HTML5 editing tools or the Electricomics creator tool itself.

6 A Website with the creator tool, a devblog with material generated over the course of the project, and links to useful tools and websites.

7 The results of three workshops run using the comics app, and the creator tool.

8 The results of a market survey conducted online, which captured users digital reading habits, and buying habits. The results of interviews carried out with the comic creators during the process, and discussions recorded at the project meetings.

Academic outcomes

Gazzard, A and Goodbrey, D (2014) Electricomics: A Collaborative Digital Comics Case Study, presented at *The Fifth International Graphic Novel and Comics Conference* at the British Library (September 2014). A write up of this talk can be found here: http://electricomics.net/2014/07/digital-pages/

The Comic Electric, A Digital comics symposium, at University of Hertfordshire organized by research partners, with 12 papers being given as well as Electricomics giving the Keynote speech.– 14th October 2015

An archive of the Youtube live stream, plus the high quality videos of each panel once they're done.

The Digital Comics Research List- A new academic mailing list setup specifically to share digital comics research.

The Build Process

The build approach to the technology needed by the project had both similarities and large differences to how Ocasta Studios usually works with clients. There's always uncertainty and translation needed between

developers and the business people commissioning work but usually the end goal is much more clearly known. The challenge - and the joy - was to work on a project where the final output was not known and that we would have a large input into the final answer.

The first discovery phase prior to development helped structure the overall approach needed by the code development. Having four comics to work on that used different techniques and the research input that demonstrated the scope of possible comic structures helped Ocasta detail how broad the final solution would need to be. We also needed to be aware of the eventual business goals of being available to everyone everywhere. After this work we agreed some of the key inputs were:

- Optimised for mobile usage
- Needed to eventually work across platforms
- Needed to be open sourced
- Had to be 'incrementally improvable'. Not all functionality would be there on day one
- Needed to encompass a whole ecosystem, can't just be a component of a solution.

The key deliverables agreed upon therefore became:

Electricomic Library

This is the key component for creating and managing comic assets. The decision was taken to create the comics using HTML5 to ease cross platform portability and to make use of the existing functions contained within the standards. It allows us to specify canvas size (to create both panel based and infinite canvas comics) and flexibility to put assets on a canvas and remove as necessary. Animations and interactions can also be managed.

As well as simply using HTML5 we were able to specify two useful features:

- A JavaScript library of common Electricomic techniques which are used frequently. This saves creators from having to write all their own code for comic manipulation. It also helps puts some structure on the comics which has been fed from the creative best practice advice.

- A package and manifest format that allows us to specify a container for a comic with the necessary metadata to showcase the comic. This will be need for an eventual marketplace for promoting comics using a standard description language.

As we worked on each comic in turn, taking the individual assets and creating the comic it allowed us to incrementally add functions to the library. In the future this can continue, with new techniques and enhancements being incrementally added.

Electricomic App

This is the Electricomic reader mobile application used to view a comic. For the project it was agreed to support a single platform and device type as a demonstrator, which given market share and capabilities was chosen to be the Apple iPad running iOS. This has the screen size to read a comic easily combined with the capabilities to support advanced interactions, namely;

- Touch screen allowing tap, swipe, pinch, etc
- Accelerometer to detect screen movement to support sway, shake and orientation changes
- Sound.

The reader was written using Objective-C which is the native iOS development language allowing maximum fluidity and control. The app user interface was designed to easily allow selection between the initial comics and also the reading of third party content. Behind the scenes the app manages the very large asset files comprising each comic and this is then rendered with an integrated web view.

The application was developed over the course of several months allowing changes in behaviour and feedback to influence the final solution. For launch the app will be packaged up and distributed via the Apple App Store which gives us a worldwide audience.

Following on from the research project it is intended that native comic readers will be created for the other mobile platforms and support extended to phones as well so the whole global market can be reached.

Information Server

The long term plan is for a full marketplace to be created that allows Electricomics to be published, distributed and paid for world wide. For the research project stage though a web site explaining the project and showcasing progress has been deemed suitable and this has been created using the popular Wordpress CMS, hosted by Ocasta.

Creator Tool

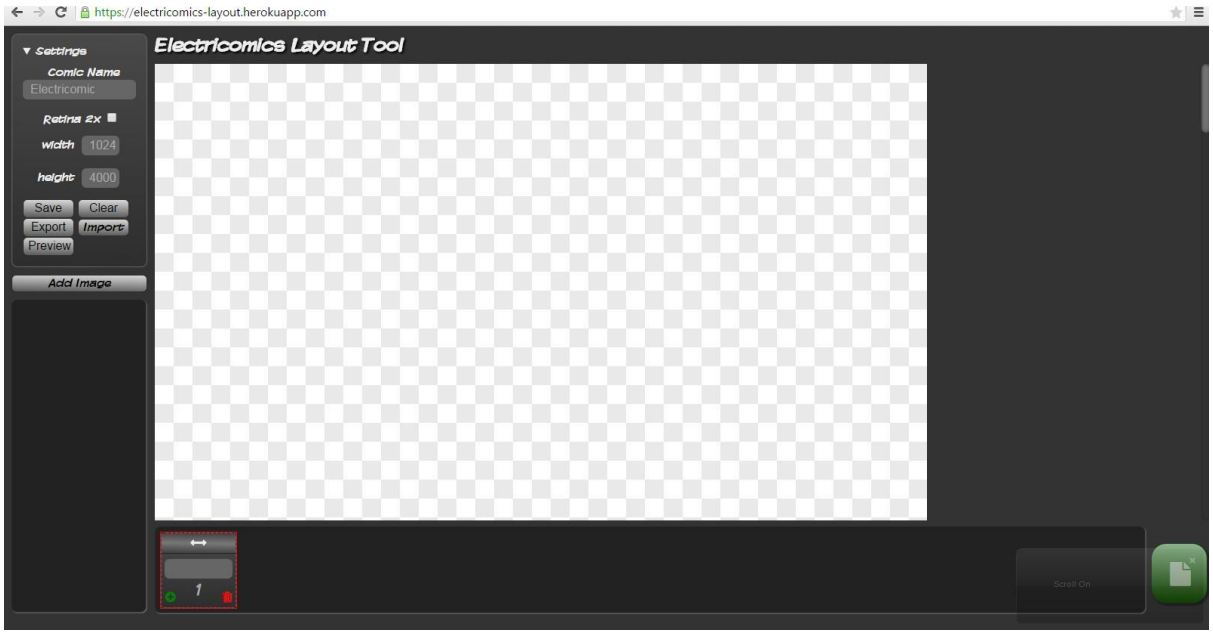
The last deliverable and one that caused most issues was a Creator Tool. This allows comic creators to easily make an Electricomic but was the subject of some confusion between the team members. Ocasta would refer to the Toolkit (the comic library) while researchers and artists thought this referred to a creator tool. When the misunderstanding was cleared up it was agreed to create a basic tool that people could use for familiarisation but one that would be unlikely to be able to create anything other than a very simple comic. A more robust solution for comic creation could then be worked on post-project.

The tool was written in HTML5 and allows drag and drop positioning of image assets on a flexible canvas. A final solution may take a different approach and will be researched more fully in the future.

Testing Sessions

First session: Creator Tool tested by comic creators at UCL

While the comics were being drawn, and the JavaScript library was being written, the team knew they needed some feedback from the comic creative community on what they needed to make digital comics. There was a basic layout tool by that stage, so the team had a workshop with industry professionals and got them to feed back on it.


https://electricomics-layout.herokuapp.com
Electricomics Layout Tool
Settings
Comic Name
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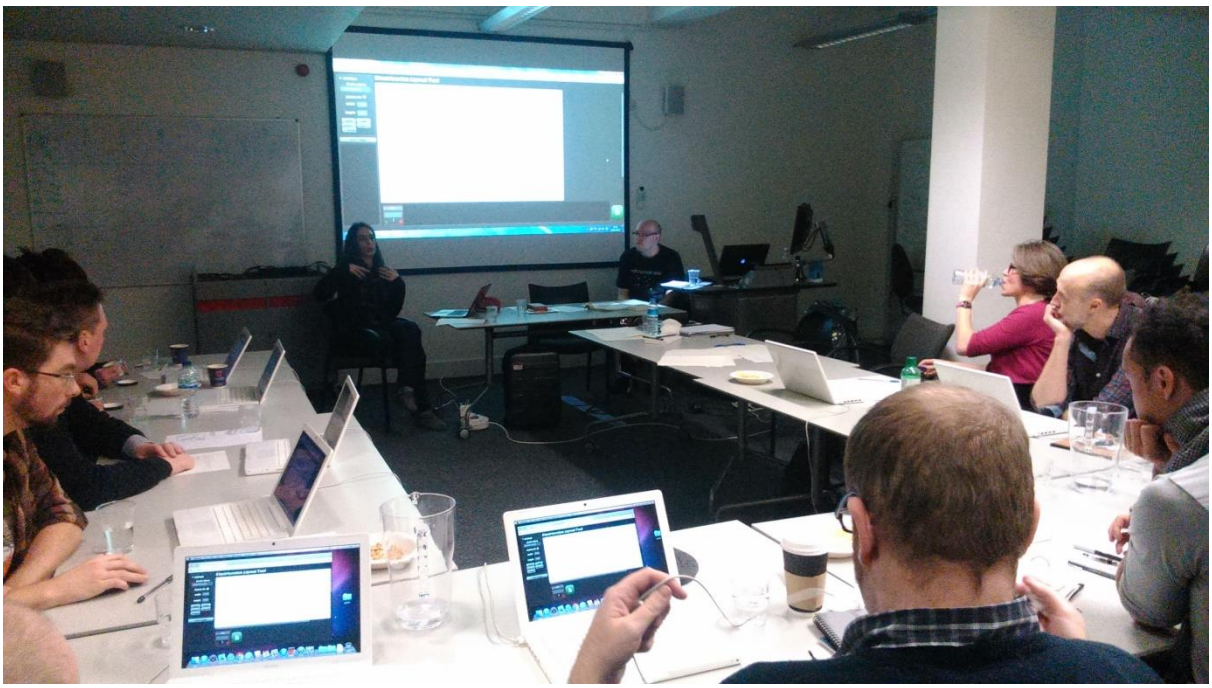
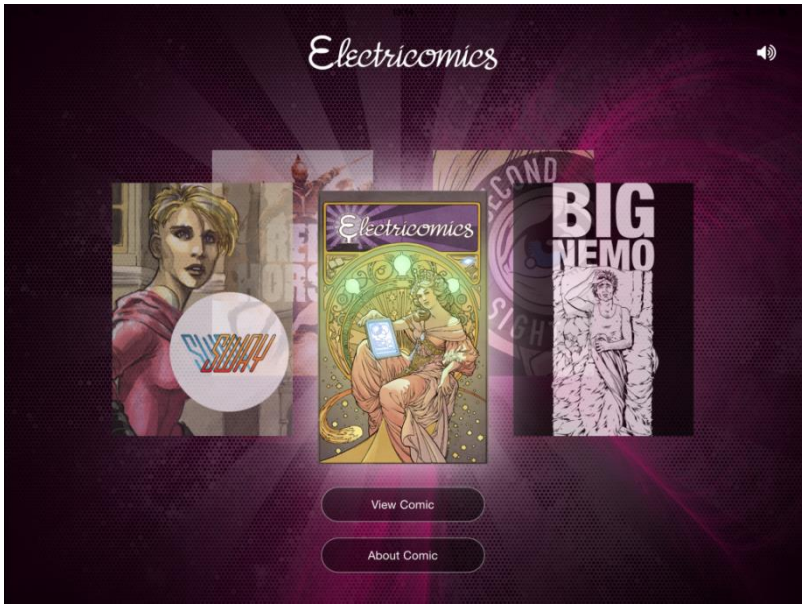


The results on the layout tool were interesting but a lot of much broader conversation happened around digital comics in general. One interesting point was the idea that professionals might not want to put time and energy into making an Electricomic if they couldn't then access it except through the main app portal. The group said they would also want to embed it into their own websites, and really feel like they owned their content. There were also concerns over the format. If the files were Electricomics only, then what if we went under, and they lost all their files? The overall consensus among the group was that if the UI was clean and simple, and it was a very simple usable thing, then they would be interested in making comics with it.

Second Session: Comics tested by users at Ocasta Labs- Brighton



As soon as they had builds of the comics, which ran in the app, the team organised a User Testing Session, down at the Ocasta offices in Brighton, for people to come and read the comics and feedback on them. The people who tested it were comic readers and comic creators.

Big Nemo was not yet built.

Red Horse is a single scrolling image, so our group found it easy to read, and enjoyed the simplicity of the infinite canvas.

All we did was to put an L in the information, to show its a Landscape format comic, and a scroll icon, to tell the reader to scroll.

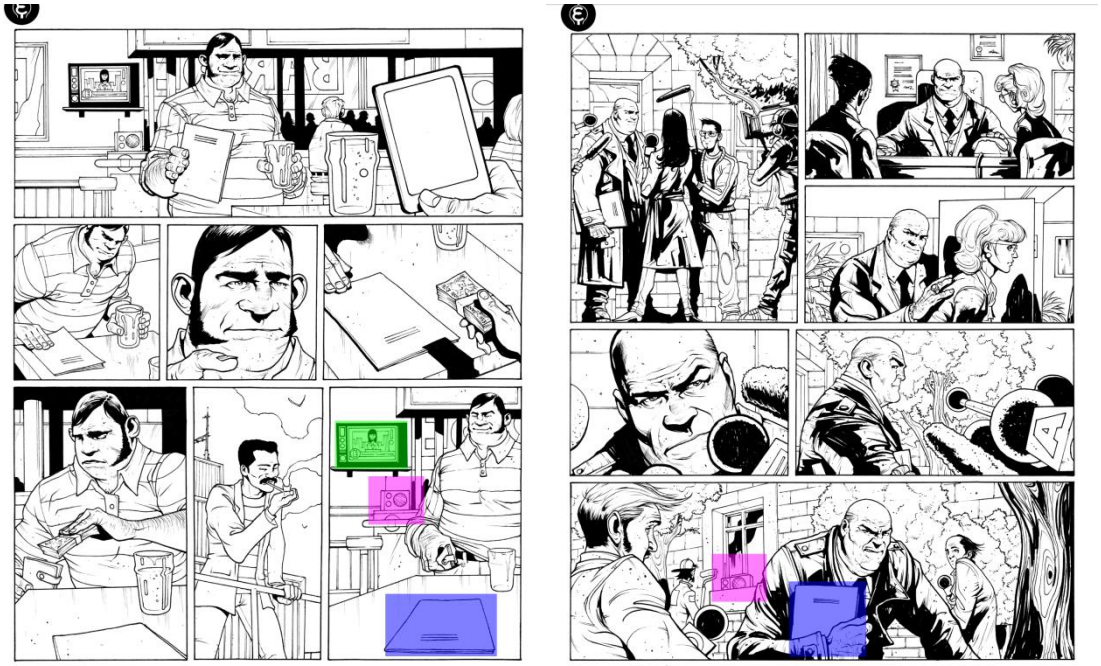
For this group, Sway was the hardest to navigate. They did not know to tilt the iPad to get the page to change. We had wondered if they might discover this themselves, but no, nobody did, and we had to show them the feature. This was despite a bright green edge to the tilt pages.

Once it was explained that they should tilt the iPad, they were pleased with the extra dimension it gave the story, but said we would have to make it clearer what to do.

What we did, was to put the ‘tilt’ icon on the information page for that comic, and have it appear on those pages.

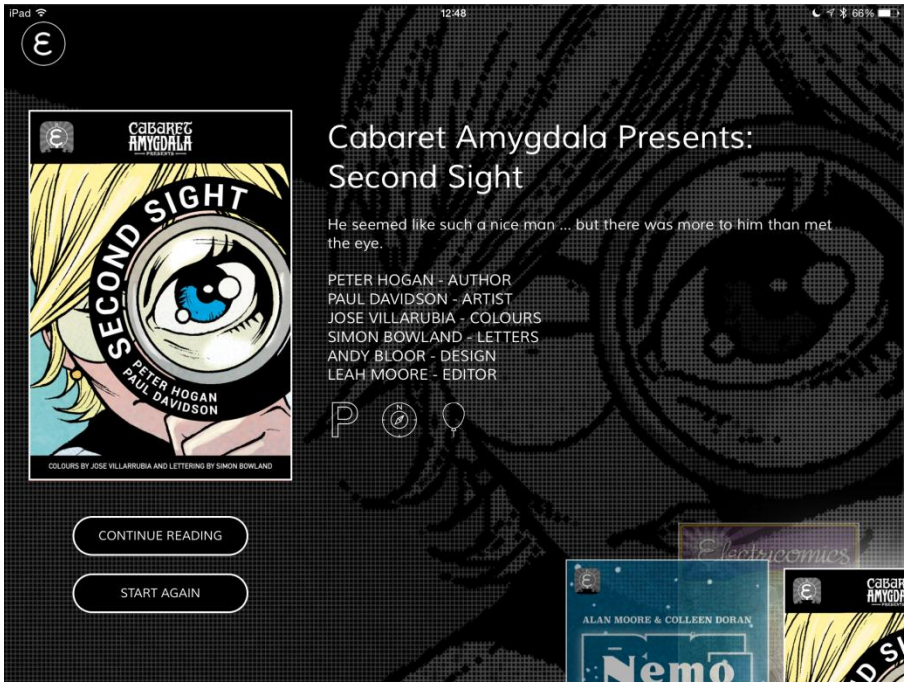
They tested Cabaret Amygdala Presents: Second Sight in its rawest form, where the animations were not working properly yet, and there was some lag time in between pages.

The buttons on the pages where the reader tapped to progress were still only flagged up by having big coloured boxes.



These did the job for testing, but we knew we had to find a more elegant solution for the final thing.

We put a little balloon icon in the information page to show the reader should tap to progress. A compass to say you can navigate in different ways, and a P, so show it's in Portrait format.



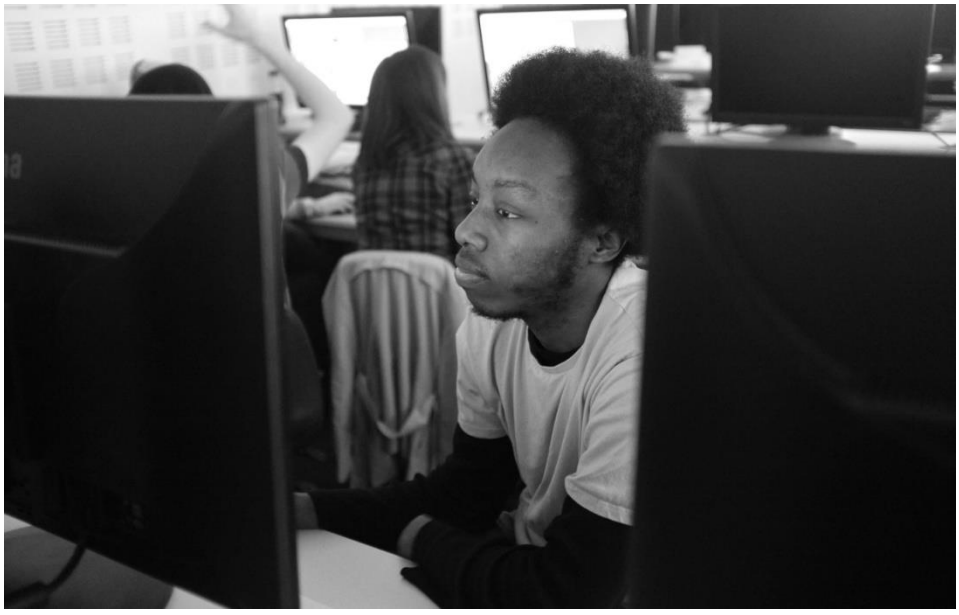
We also have a set of subtle animations created by Sean Gannon, our designer at Ocasta, and they are much more elegant and still effectively point out the hotspots.

The radio has little broadcast lines, the TV when you see it in the app, has a flicker and static, and the folder jiggles a bit.

Third session: Comics and creator tool tested by students at the University of Hertfordshire

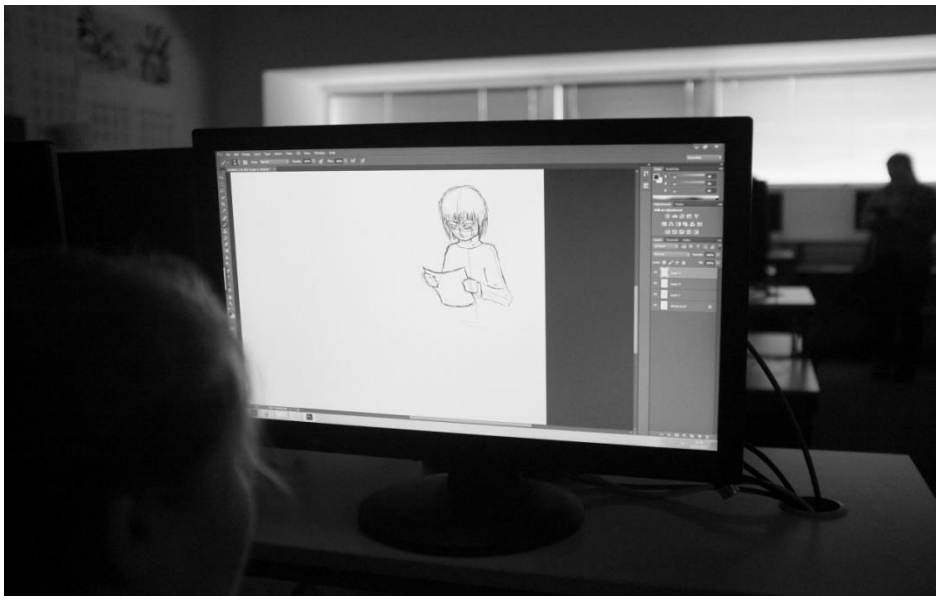
The team wondered if other groups would find it so useful, and maybe it was just the hand-picked comic creators who would like it. Daniel suggested a further session at his University using his students, who were from a broad background of gaming, animation, fine art, illustration and 3D modelling. This young group would possibly have higher expectations of the software, and might not see a need for the tool.

The students were challenged to make their own infinite canvas comics, where all the panels are on the same page, and the reader scrolls through them.



Although the comics created were simple, they were really effective. One student made one which was single long picture of a creature wearing a big tall stack of hats. You scrolled down the pile of hats and got to see all the details as you scrolled. She suggested you could have fun jamming on one image where you can't see what the previous person has drawn - like “The Exquisite Corpse” game.

The students could see the benefit of having a single file for their comic, and that if there were more features to it, it would be a useful tool for them to use in making their own comics.



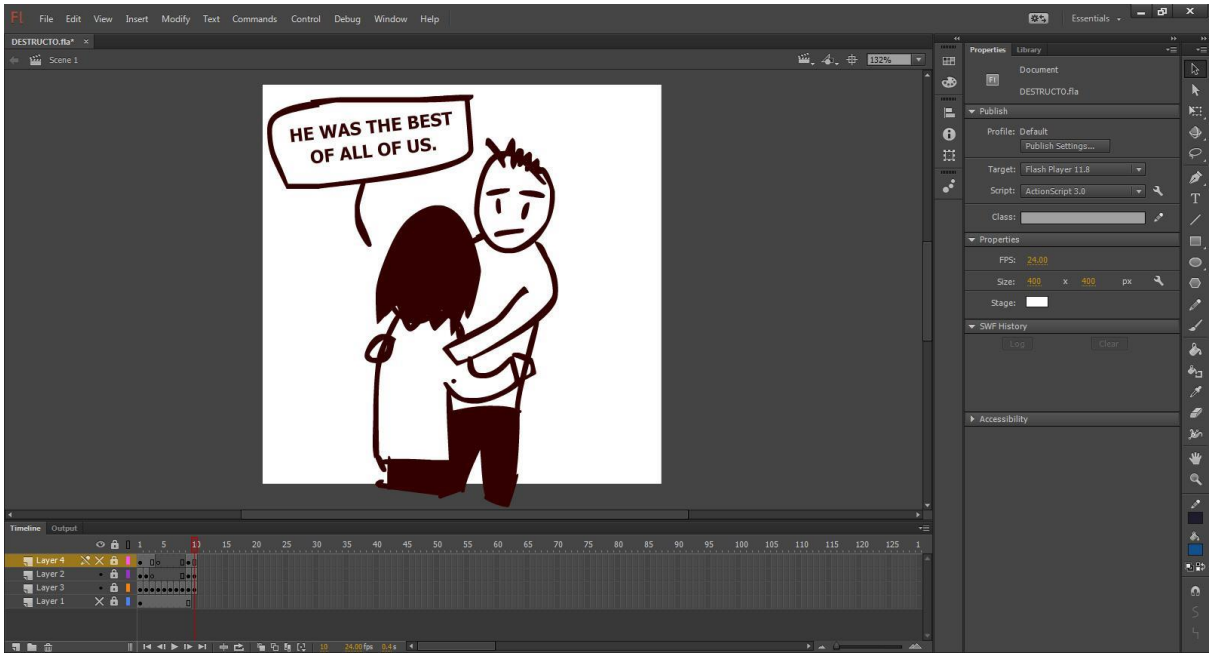
We also took the opportunity to test our comics at the same time, so we took small groups of the students aside to read the comics on iPads. They responded more favourably to the added features in the comics than the first group in Brighton did, and said they liked things that made it worth reading a comic a second time.

Creating a digital comic with the open source library

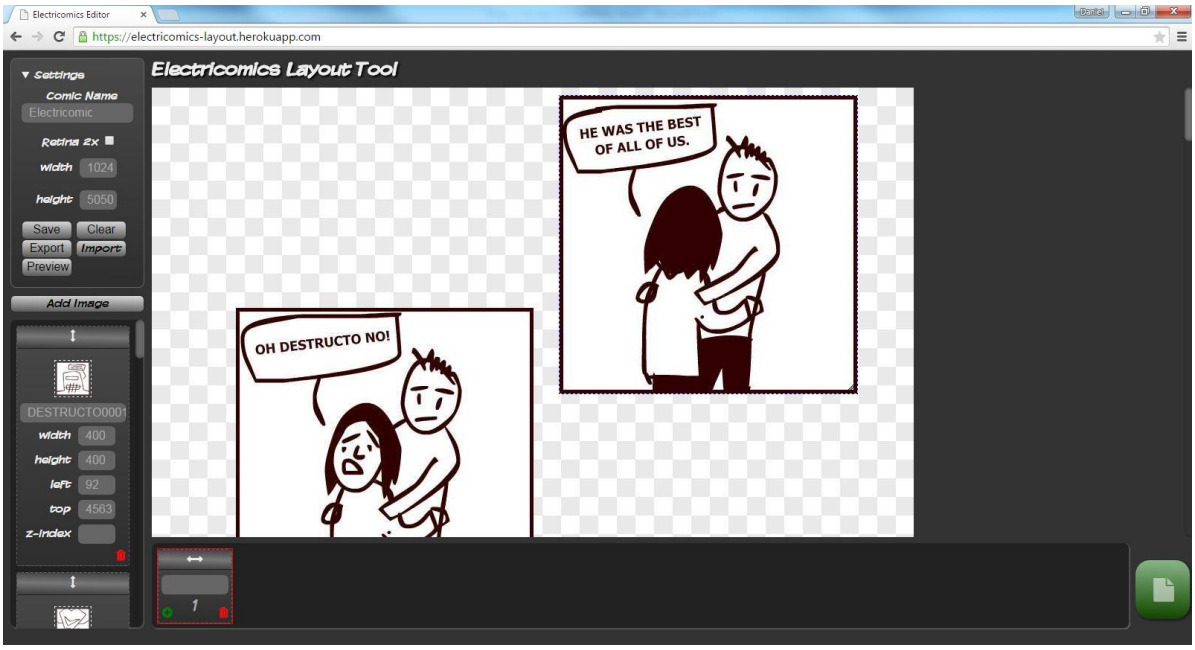
Part of the research methodology involved practice-based research of making comics to highlight the possibilities of the Electricomics creator tool. Daniel Goodbrey explains:

> "During the workshop held at the University of Hertfordshire I demonstrated the use of the creator tool to create an infinite canvas comic. As part of this demonstration I created my own comic live in front of the group.

> To do this I improvised a simple, one-scene story which I then drew out as a sequence of panels in Adobe Flash.



These were exported as a series of jpegs, which I then assembled into a comic using the creator tool.



The creator tool let me experiment with the layout of the story on the fly, allowing me to take advantage of the less restricted spatial qualities of the infinite canvas.

I was able to simply and quickly assemble the finished comic, and play with the spacing between panels for deliberate narrative effect during a key dramatic sequence within the comic."

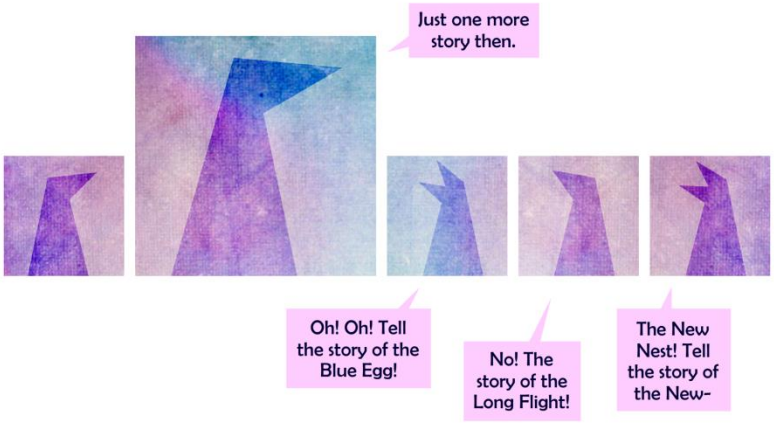
Grandfather's Hammer

"In the final stages of the project I undertook a further, more elaborate experiment to test out the potential of the Electricomic format. In this instance the comic was designed specifically with the open source nature of the format in mind. My goal was to create a short, self-contained narrative that a new user of the format would easily be able to take apart and remix or play with, in order to better understand how an Electricomic was constructed. This meant coming up with a story and artwork that could be presented to the public as a fully open source set of resources.

Having already created an infinite canvas comic using the toolset, this time I decided to focus instead on using a panel delivery approach. This would allow me to experiment with different groupings and layouts of panels that could then be built up, modified and rearranged each time the reader taps the screen. One of my concerns in using this method was ensuring enough information was delivered to the screen with each tap. Breaking down the reading experience too much – forcing the reader to tap to make every single panel or speech balloon appear – can both frustrate the reader, and weaken the juxtapositional nature of the comics' form.

In terms of narrative, I settled quickly on the idea of telling some sort of fable. This would potentially work well in the short form and also give me the chance to play with the relationship between teller and listener, in a way that might interestingly exploit the panel delivery format. After a week of trying out different approaches to

this basic premise, I settled on a darkly-themed post human fable which I was then able to develop into a short written script. To illustrate this script I decided to keep the artwork simple but compelling, with the aim of demonstrating an example of visual storytelling that didn't rely on significant drawing ability. I constructed the artwork using combinations of simple primitive shapes in Flash. Open source paint textures sourced from the web formed the basis for the shading laid over these shapes.



The finished comic, *Grandfather's Hammer,* was delivered as a sequence of image files to Ocasta for them to package up in the Electricomic format. Ideally I would have completed this stage myself within the creator tool. However, due to the end of project crunch, the functionality necessary to do this was not available in the toolset during the window of time I had available to work on the comic. At launch, *Grandfather's Hammer* will be placed online to serve as the first example of an Electricomic outside of the original four included with the app. People will be able download the entire comic, and examine how it has been constructed. Clicking on the comic's URL on the Electricomics website will launch the Electricomics app and add *Grandfather's Hammer* into the app's library. This will serve to demonstrate how comics created by the community can be constructed, added to the library and read within the app."

Workshops and outreach Events

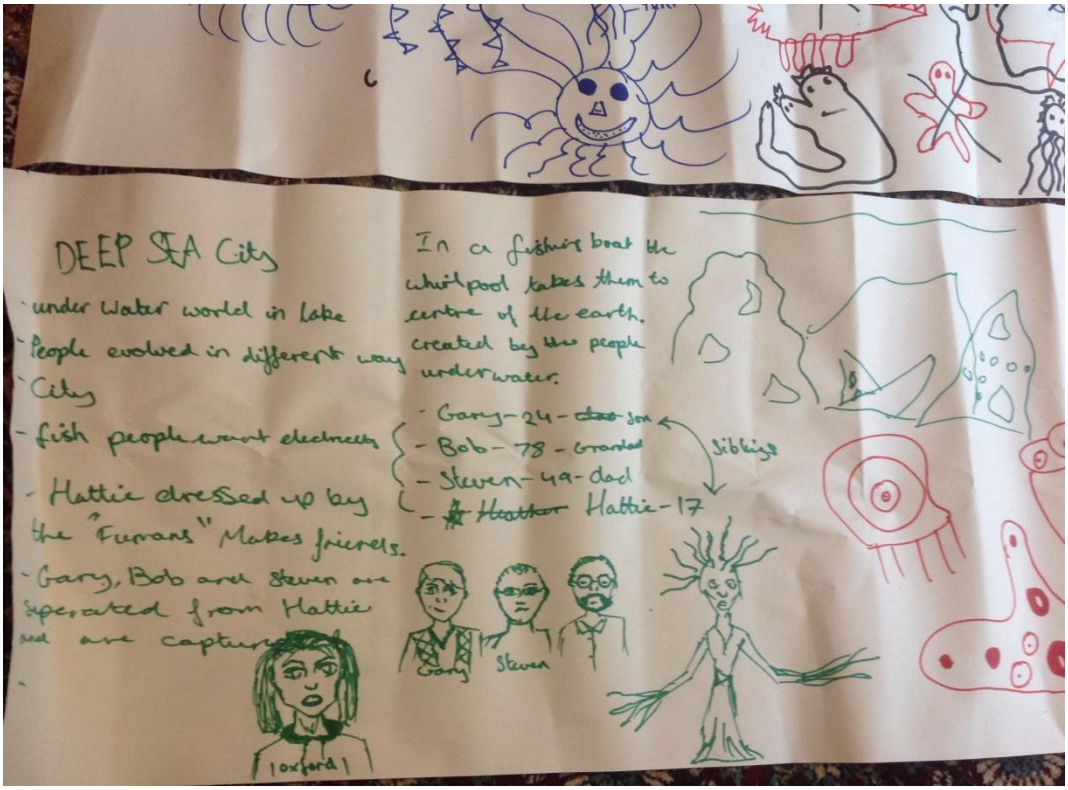
Before we had the comics built or the app to test, we were asked to take part in WiredNG and we had a table at Thought Bubble. These events served as market research opportunities, as well as a way of broadening our potential audience and laying groundwork for future marketing. Dissemination of our findings was tough, as we hadn't had many findings by that point, apart from the observations made at meetings, but both events proved a great way to think about what was needed from a comic creator tool, and a reader app.

Wired-Next Generation 2014

As well as our User testing sessions we carried out a workshop at the WiredNG event in Tobacco Wharf in London, where we got young people to make comics on some random and science based subjects. They produced masses of ideas and sketches, and were happy to dive into drawing them up. Talking to them, they and their parents were very interested in the creative possibilities a creator tool would offer.

We provided a wide range of comics for reference, to show them they can make comics about anything they are interested in, history, music, or something personal.

We had them brainstorm in teams, and draw up their ideas, before working on actual comics.



Thought Bubble Festival 2014

We also had a stand at Thought Bubble Comics Festival in Leeds, in November, selling booklets which featured art, interviews and material from the whole team, and badges.

During the convention, we had a lot of people come over to buy booklets and badges. We asked everyone who came to the table what they loved or

hated about digital comics, what worked and what didn't work for them. They wrote their responses on file cards and put them in our box.

> “I love it when the sounds and music is great and weird. I hate it when there is a lot of stuff before I read or people selling me things”

> “I like digital comics, it's easy to subscribe, and never miss an issue. It will never take away the printed version, but I like having both options.”

> “Likes: Infinite canvas, Unfiltered colour, interactive content. Dislikes: Rigid Page flips, Intactile”

> “what would make the app useful would be a very simple map, so really easy to use”

> “Love colour brightness, page turn, large volume, lover price, portable devices. Hate keeping them organised, too many excluding platforms, signing in”

> “great way to get comics, cheap and environmentally friendly, poor visuals when splash pages are squashed”

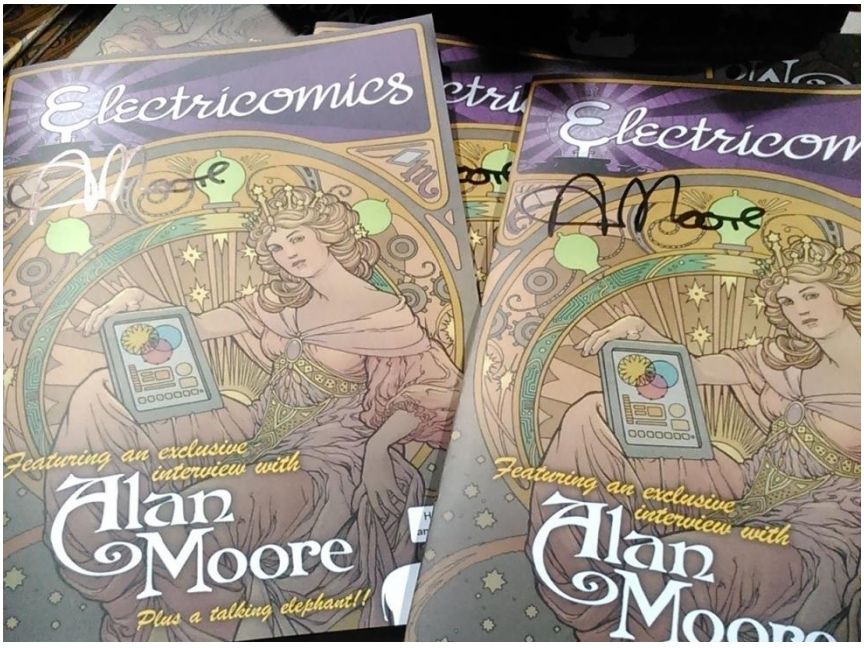
> “can take them anywhere and they are weightless, but not as easy to offer them as presents”

> “hate needless motion, and trying to be films, love opportunities for new voices”

> “I like digital because it's easier than going to a shop, or ordering a print edition. Also, artwork is easier to study close up and in detail”

> “love panel movement, focus on art if you want, hate format locking- double page spreads”

> “I love the immediacy, want, download, read. I hate how it can be cumbersome and inconsistent in translating print to digital, but I also hate ‘Bells and Whistles’, but I love comics in all their forms so I’m happy to work my way through anything”



Booklets with cover by Colleen Doran, coloured by Jose Villarrubia and designed by Andy Bloor

The sale of the books and badges actually did just what we'd hoped and gave us a chance to connect with the comics industry on a one to one basis.

We had a panel, where we explained the genesis of the project, and what we hoped to achieve, and then fielded questions from the audience. All the questions they asked were addressing things we were looking at in the project. They were excited by the possibilities and open minded about what we could produce.

The session was moderated by Hannah Means Shannon from BleedingCool.com and she later interviewed the team for a series of interviews that you can read here: http://www.bleedingcool.com/tag/electricomics/

The session was recorded by Chris Thompson for www.PopCultureHound.net where he podcasted it over two broadcasts, along with interviews with the team. Listen here:

http://popculturehound.net/episode-112-talking-electricomics-with-moore-reppion/

http://popculturehound.net/episode-113-meeting-gabriel-hardman-corinna-bechko/

Because we didn't sell all of the booklets at the show, we set up a webstore to open them to the public. A few are still available at www.orphansofthestorm.bigcartel.com.

Risks

A number of key risks were identified at the start of the project.

That the schedule would slip due to the complex production pipeline peculiar to comics

This did eventually happen, but it was because of a previous risk we had not identified: Legal paperwork and contracts not being ready at the beginning of the project.

At the start of the project, contracts were needed between all parties involved. The contracts were drafted by somebody as a favour, in their free time and thus, the schedule slipped by four whole months, pushing the comics pipeline back by almost half a year. This impacted the work schedules

of all involved. It meant we later lost one of our big name artists as he no longer had time to draw it. It forced the development team to take on more work while they waited for the funding to come through.

If there is one take-away from this, it would be, include legal work in your initial budget as a vital necessity unless one of you is a contract lawyer. If you have somebody ready to turn it round for you, it will have a huge positive impact.

That one or more of the team members would be unable to complete their part of the project

We felt we had mitigated that risk, by ensuring we had several different writers and artists, two researchers, an experienced app development company with engineers with the necessary skill sets, and three directors of OOTS, as well as a Project Manager to oversee it all. The writers and artists were personally known to the team, and it was felt that with good communication, there would be no hiccups.

As it transpired, the project was beset from the start with a series of changes of role, team members being away at key junctures, illnesses and professional and personal issues which took them from the project. The staff turnover at Ocasta was quite high as they drafted in more people to cope with the workload. We had to find a replacement artist, a letterer, and somebody else to format art, when those people were unable to continue. Although this added to the slippage, it must be noted that these things were not insurmountable. Luckily the PM had enough contacts to replace people quickly.

Results

Conclusions

The project set out to explore how digital technologies can change and enhance a traditional print based medium through the development of an adaptable and easily accessible toolset aimed at creative practitioners in the wider arts sector.

To do this, we set out to understand:

- The current state of digital comics
- The relationship between comic writers, artists and technology partners in the creation of digital comics (more specifically in identifying a common language that could be used amongst members of a comic creation team)
- How digital technologies might affect reading, navigation, interaction and storytelling in digital comics
- The key features that needed to be provided by a comic creation toolset for use by comic writers and artists
- The current digital comics market for future business models, including how people purchased content in relation to possible funding and subscription models.

Digital comics are their own distinct genre of digital media. Developing the medium is a fine balance between retaining the elements of what constitutes a comic, and the comic reading experience, alongside the desire to produce innovative, new reading experiences that take advantage of tablet devices.

Navigation plays a large role in how people interact with digital storytelling.

Not all users are aware of the functionality of tablet devices beyond tapping and scrolling.

The market for a digital comics creation kit differs depending on audience. Professional comics creators would like to be able to create similar experiences to those showcased in the four digital comics as part of the

Electricomics app. Non-professionals who have used the creation kit like the basic functionality that it offers as a means to try out ideas.

Further awareness of using open source toolkits that require additional technical input instead of WYSIWYG (what you see is what you get) editors is needed amongst the professional arts community in the hope of lowering costs for future development.

Changing reading habits: the R&D process of creating digital comics

Three workshops were held at various stages of the R&D process including one just before the comics were put together, one during the development process and one nearer the end. The main aim of the workshops was to explore audience engagement with the digital comic application, and in two of the workshops we were also able to trial the digital comics creator tool with two different audiences; one of professional comic creators and one with groups of students who had an interest in comics but were not making comics for a living.

Each group was aged between 20 and 50 and included a range of male and female participants. The majority identified as being fans and/or readers of comics (print and/or digital). As the digital comic creation tool was not fully developed during this round of R&D, we were unable to test it amongst the wider arts sector, although we did speak to a few people who were interested in producing interactive or digital narratives more broadly as a way of engaging with other opinions about the tool.

It became clear in initial discussions at the workshops that there were certain tropes of print comics that our audience wanted us to maintain, yet they were also aware that creating digital comics for tablet devices would involve new challenges. Some of the key initial points from these sessions were that we needed to think about:

- How to replicate progress through a comic e.g. by using bookmarking functionality or timelines
- The possibilities of designing a new language for digital comics as some parts of the traditional comic book form cannot be replicated
- How digital comics should work with the technology rather than just using it as an “all singing and dancing approach”. This participant liked

stories that use their digital features to actually communicate the story, rather than just having many digital features as embellishment. (Workshop Participant 1)

- If particular features of tablet devices are to be used (such as accelerometers) they needed to be used for a reason.

Surprisingly, the sense of "immersion" as quoted by many of our workshop participants became a key part of discussions surrounding the qualities of print based comics. For many, digital devices could be quite distracting with multiple notifications (such as email and social media alerts). Therefore, there were some concerns that this might cause distractions when reading the comic.

Key comments about the role of narrative and the designing for tablet devices often focused around:

- Digital needs to be intrinsic to the story being told, not just an "add on"
- Strength of comic is the quality of the story
- Control can be taken away from the narrative through changes in imagery but not through removable of words through replacing with spoken narrative.

Although sound was a point for further discussion in creating the comics, the main aim of the project was to initially explore the possibilities through imagery and text.

Creating a digital comic with the Electricomics layout tool

Different types of audience: Although the two audiences attending the workshops and focus groups agreed on the main points for development of the digital comics, there were differing opinions about the comic creation tool.

The initial design of the tool was tested with both professional comic creators and non-professional comic creators with a range of opinions. Professional comic creators were confused about some of the terms associated with the tool such as save, import and export, with each process not functioning in the way they imagined. As the professional creators were

concerned with being able to publish their final comics to a final platform this was deemed to be an important part of the tool that needed further work and discussion. However, for the non-professional users, the ability to be able to play around with the constraints of the system and use it as a means to test ideas appeared to work well. In fact for non-professional users, the toolkit's simplicity and focus of purpose (in the case of the workshop, this was creating infinite canvas comics) was seen as a strength. It was also understood that this tool could be used as part of suite of other tools that people currently used in their own digital practices, such as Photoshop or the comparable free image manipulation software, Gimp.

Both audiences did agree on some features that they felt were important to further development of the tool. These included:

- Extra menus or collapsible menus for when images were added to allow for ease of workflow
- Dragging and moving images together
- Copying and pasting panels
- The ability to duplicate images rather than having to re-import them each time
- Having a snap to grid function, or be able to fine tune placement of images with keyboard controls (at the moment the tool is driven by mouse control only)
- Being able to duplicate pages once they had been laid out
- Ability to add text
- Ability to add and change a background colour
- Ability to add hotspots or steps to link pages together.

Changing practices and modes of production

For all of the writers, apart from Leah Moore and John Reppion, this was their first time writing for digital devices. This in itself, proved to be an interesting point of discussion for the researchers, and the writers were questioned as to whether their practices had changed, and what advice they could offer other people writing digital comics. Whereas some writers felt

their processes hadn't changed, others were more aware of what the properties of the tablet device could offer. Commenting on whether his writing process had changed Pete Hogan in particular noted, "definitely, in the sense that it's all put together differently from a print comic, so you have to think in terms of what new approaches might be used, and then figure out a way to make that actually happen." However, at the end of the day, the key point for all writers was that the narrative still played an important role. For example:

Narrative played an important part for the writers and not the technology itself, e.g.:

> "…focus on story. Format is just a matter of getting the details down. Narrative is always king." Garth Ennis

> "…whatever the format, you still need a story to tell – but with digital, the way you can tell it has changed, opened up completely. The rules have changed, and sometimes you can even make up your own." Pete Hogan

> "The digital process is much faster and allows more changes. This fluidity benefits the workflow in general. There are many ways to fix images. On the flip side, nothing beats a physical piece of art in my opinion." Frank Victoria

Interaction and signposting experiences

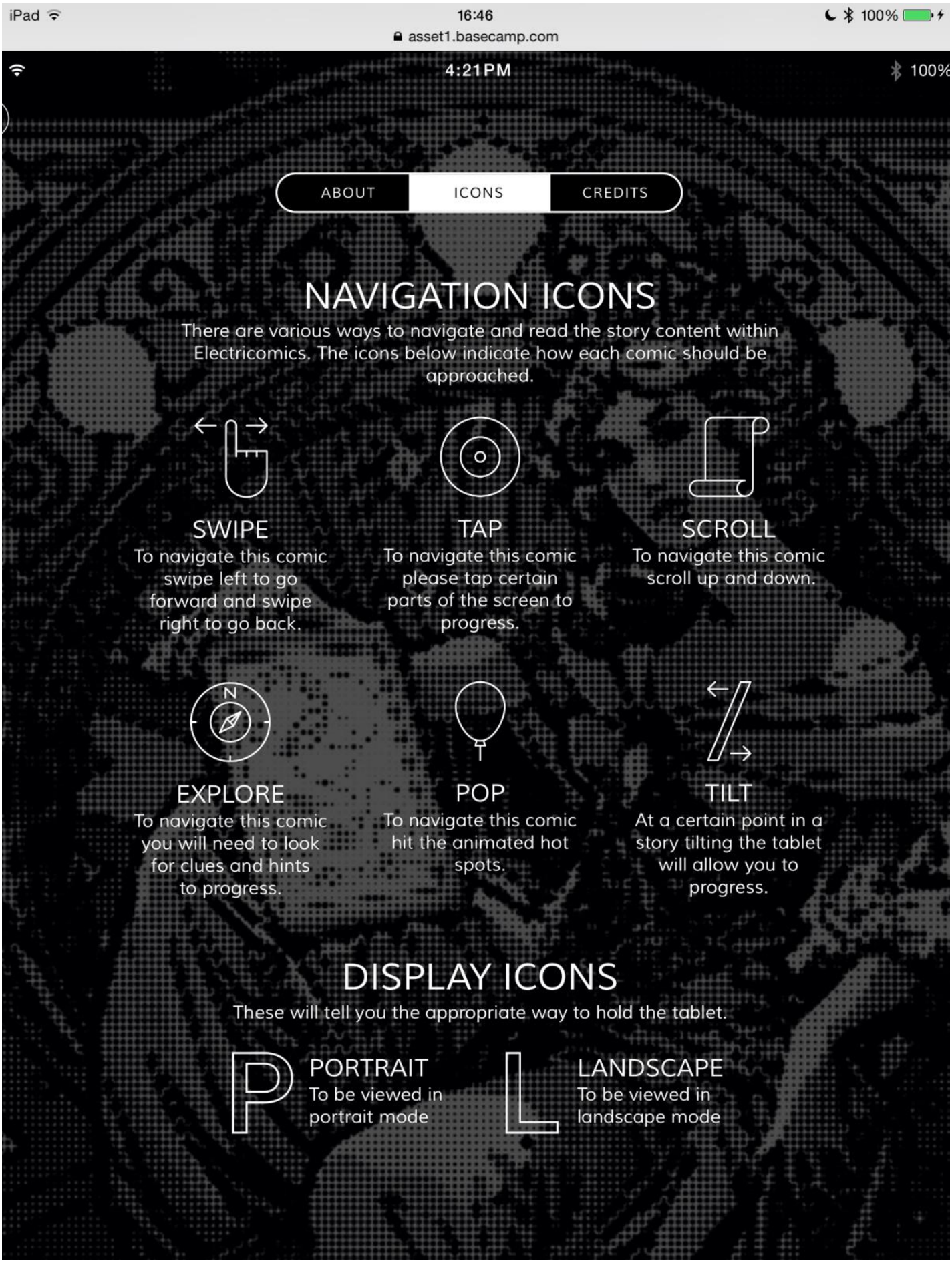
One of the key issues that arose from the user testing was the need to signpost the interactive experience of each comic. As each comic dealt with narrative and user interaction in a different way, each time a user encountered a new comic they had to understand a new way of reading and engaging with it. For some users this was a straightforward process, but it wasn't for all, and the ability for the user to drive the interaction and narrative (as opposed to just stumbling across it) was something that the project had to engage with. Having this early user testing was an important part of the process of ironing out these issues.

In earlier tests of the comics, both Second Sight and Sway created the most problems in terms of how users navigated their way through the narrative. As a temporary solution, coloured blocks were used to signal that the user needed to react in a different way (in this instance, tap on the coloured

block). By making these elements stand out, the process of reading the comic felt more obvious. Therefore, in later designs, these coloured block progressed to short animations, that although drew the users attention to that particular component, did not distract from reading the rest of the comic.

For Sway, the main problem arose from users not always realizing that they needed to tilt the tablet device to activate more of the narrative. For users that did not find this function, the narrative felt incomplete with comments such as “is that it?” In initial designs of the comic, the interactivity was highlighted by green or purple borders around that particular frame of the comic. However, this was generally not noted by users as it was outside of the frame of the comic panel, therefore deemed to not be a central part of the narrative or their own engagement with this section.

Noticing these issues, it was decided that a key was needed to determine the type of experience that each comic would enable in the menu system when choosing the comic (shown on the next page).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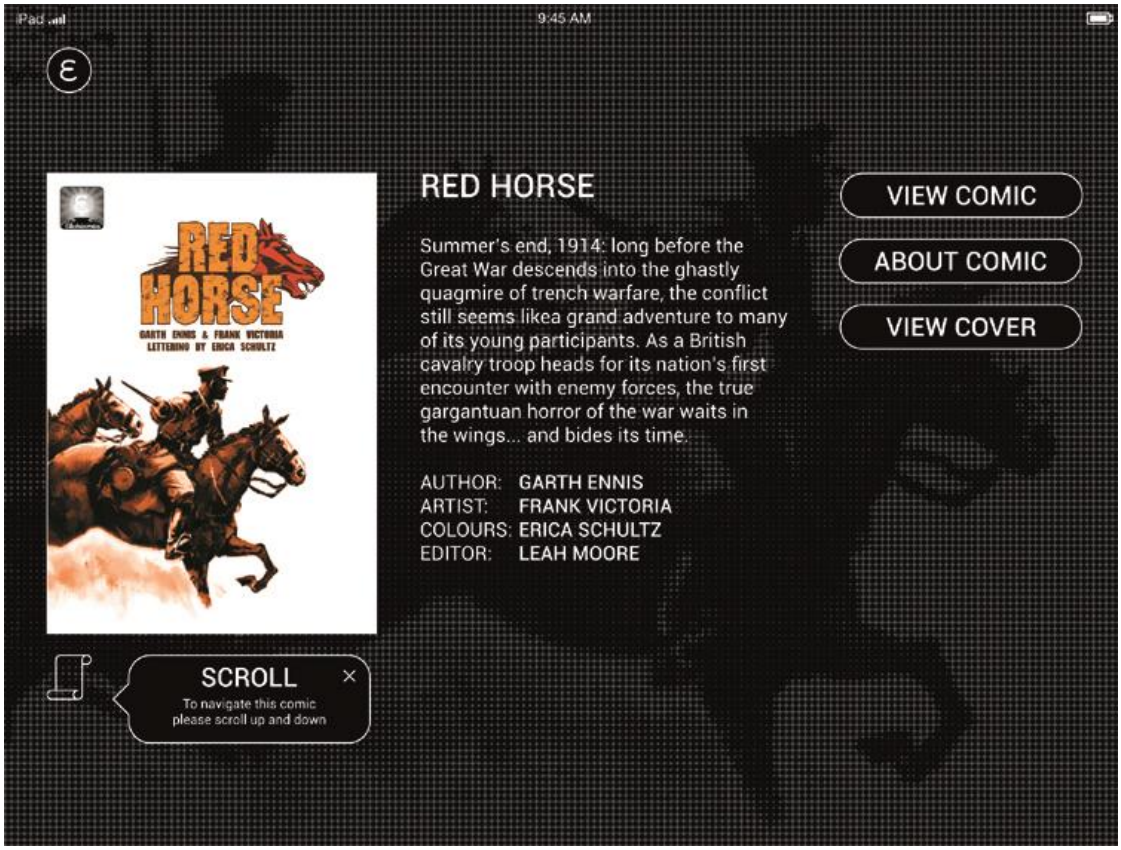
ABOUT
ICONS
CREDITS
NAVIGATION ICONS
There are various ways to navigate and read the story content within Electricomics. The icons below indicate how each comic should be approached.
SWIPE
To navigate this comic swipe left to go forward and swipe right to go back.
TAP
To navigate this comic please tap certain parts of the screen to progress.
SCROLL
To navigate this comic scroll up and down.
N
EXPLORE
To navigate this comic you will need to look for clues and hints to progress.
POP
To navigate this comic hit the animated hot spots.
TILT
At a certain point in a story tilting the tablet will allow you to progress.
DISPLAY ICONS
These will tell you the appropriate way to hold the tablet.
P
PORTRAIT
To be viewed in portrait mode
L
LANDSCAPE
To be viewed in landscape mode

The key was focused around different sub-genres of interaction or display that emerged during the design process, such as whether the comic is landscape or portrait, whether it is a ‘tap’ or ‘swipe’ comic and whether it has tilt function or if the user has to find extra features to progress the narrative (such as in Second Sight) or simply scroll as in Red Horse.



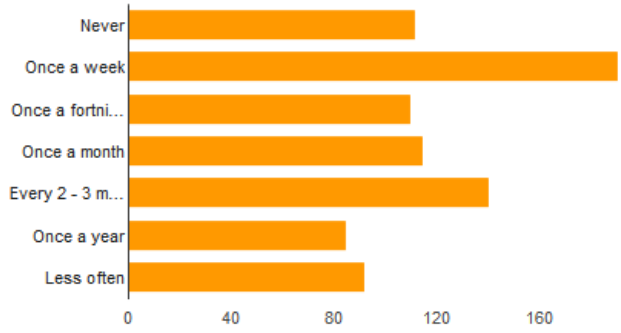
Market Research Survey Results

In order to gain further insight into current purchasing habits of consumers of print and digital comics, a survey was distributed using Google forms and the Electricomics social media channels. The survey asked questions about what types of comics people purchased, the types of devices people read comics on, how much they would expect to pay for digital comics, and whether they contributed to various funding platforms such as Patreon, Bandcamp, Humble Bundle, and Kickstarter amongst others.

The survey received 846 responses, of which 97.8% read comics books, 20.2% create comic books and 4.7% sell comic books. Although a higher percentage of people had never bought a digital comic as opposed to a print one, the frequency of buying both print and digital comic books was nearly comparable from the results (see figures 1 and 2)

Fig.1

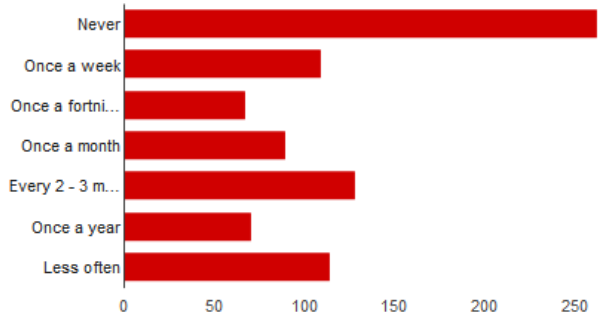
Print comic books [Do often do you purchase print or digital comics?]



Never	**112**	13.2%
Once a week	**191**	22.6%
Once a fortnight	**110**	13%
Once a month	**115**	13.6%
Every 2 - 3 months	**141**	16.7%
Once a year	**85**	10%
Less often	**92**	10.9%

Fig.2

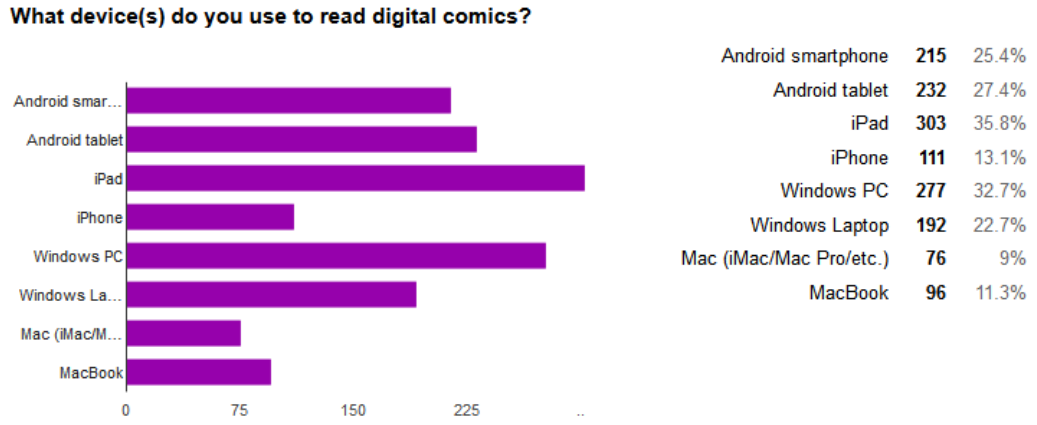
Digital comic books [Do often do you purchase print or digital comics?]



Never	**263**	31.1%
Once a week	**110**	13%
Once a fortnight	**68**	8%
Once a month	**90**	10.6%
Every 2 - 3 months	**129**	15.2%
Once a year	**71**	8.4%
Less often	**115**	13.6%

In terms of devices used to read digital comics, Android smartphones and tablets accounted for 25.4% and 27.4% of users respectively and iPad and iPhone usage totalled 35.8% and 13.1% respectively. Alongside this, windows PC and laptop use were seen to be more common as than Mac desktop or laptop machines. However, the use of all platforms is relevant to the team as they continue to develop the Electricomics app beyond the life of the project, as well as the comic creation tool. (See Figure 3)

Fig. 3

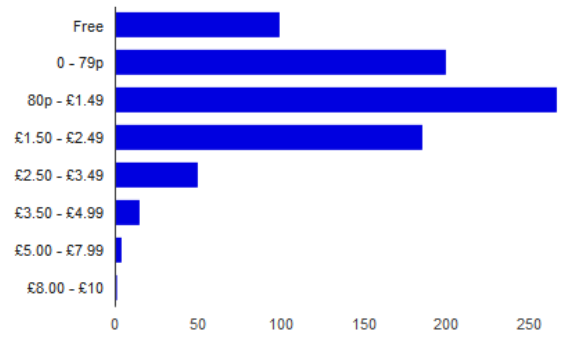


When it came to paying for digital comics, the most popular price bands fell in the 0-79p, 80p-£1.49 and £1.50 to £2.49 price range, with the majority of people in the survey willing to pay between 80p and £1.49 at 31.6% of users. This cost increased when users were asked what they would pay per digital comic collection (at the equivalent of 120 pages), where the £5.00-£7.99 price band received the highest percentage at 25.7 of survey users. Other more popular price bands could be seen to be below the £8 figure, therefore this is something to consider in future pricing models of new digital comic releases.

What was interesting from the results of the survey when it came to subscription models was that there were no clear outstanding pricing structures with a nearly equal distribution of survey users answering anything from 80p to £1.49 a month to £8-£10 for a monthly subscription. This is something that will need further investigation if monthly subscription models are adopted by the platform over paying once for content. (See Figures 4, 5, 6)

Fig.4

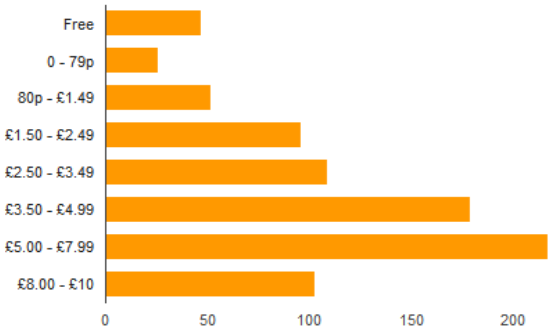
Per issue [How much would you expect to pay for a digital comic?]



Free	**100**	11.8%
0 - 79p	**200**	23.6%
80p - £1.49	**267**	31.6%
£1.50 - £2.49	**186**	22%
£2.50 - £3.49	**50**	5.9%
£3.50 - £4.99	**15**	1.8%
£5.00 - £7.99	**4**	0.5%
£8.00 - £10	**1**	0.1%

Fig.5

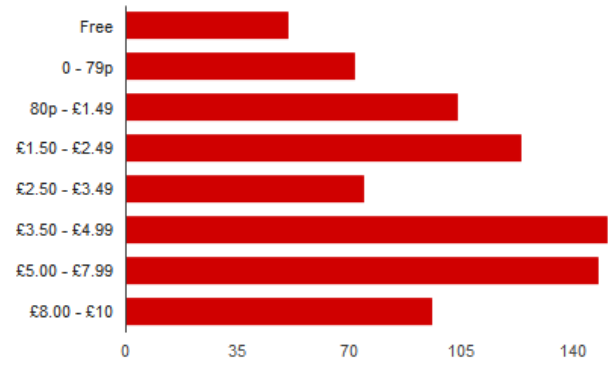
Per collection (120 pages equiv) [How much would you expect to pay for a digital comic?]



Free	**47**	5.6%
0 - 79p	**26**	3.1%
80p - £1.49	**52**	6.1%
£1.50 - £2.49	**96**	11.3%
£2.50 - £3.49	**109**	12.9%
£3.50 - £4.99	**179**	21.2%
£5.00 - £7.99	**217**	25.7%
£8.00 - £10	**103**	12.2%

Fig.6

Per monthly subscription [How much would you expect to pay for a digital comic?]



Free	**51**	6%
0 - 79p	**72**	8.5%
80p - £1.49	**104**	12.3%
£1.50 - £2.49	**124**	14.7%
£2.50 - £3.49	**75**	8.9%
£3.50 - £4.99	**151**	17.8%
£5.00 - £7.99	**148**	17.5%
£8.00 - £10	**96**	11.3%

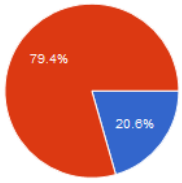
One of the questions asked by the Electricomics team was about whether users would buy digital versions of print comics that they already owned, with the majority of people saying that they wouldn't (79.4% as opposed to 20.6% saying that they would) (see Fig. 7)

The reasons given by people who said they do buy things again in digital form were diverse, but fell into two camps: Practical reasons; easy to carry, easy to show to friends, easier to store, easier to buy digital than dig a hard copy out of storage, easier to move house with and Comics Fan specific reasons; I can read it without damaging my paper copy, I can buy the single issues digitally and then the collected edition in paper.

This suggests that despite the traditionally paper based economy of comics, fans, like creators are finding the way that suits them when it comes to the emergence of digital. Digital is not replacing paper completely, but is providing a handy and quick addition to the buyers' usual habits.

Fig. 7

Do you buy digital versions of print comics that you already own?



Yes	**174**	20.6%
No	**672**	79.4%

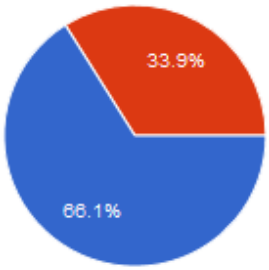
If you answered "yes", why is this?

Easier to revisit & so I can get rid of the physical copies
Easier to find, don't have to search through shelves boxes etc.
In case it is available at a low price. Read a digital version of a print comics through Comixology application can be a very surprisingly interseting experience.
Sometimes just
To have the full story to read when I am traveling.
I am moving often. Biomes take a lot of space

The reason behind this survey was to find out how people prefer to buy their digital comics, what they will pay for it, and whether that disturbs other aspects of their buying habits.

Fig.8

Do you prefer to pay for each purchase or subscribe to a service?



Pay as you go	**559**	66.1%
Subscription	**287**	33.9%

The main point of debate at the moment seems to be whether to subscribe, like with Netflix, and receive comics monthly, or pay for just the comic you want. Some companies have such large back catalogues and ongoing catalogues, that a subscription model makes good financial sense, whereas other publishers might offer a subscription for everything by one author, or all of one title. (See Fig. 8)

There is a lot to be said for the model, but the majority of people want to choose what they spend their monthly comics budget on, and tying all that to one publisher can seem a limitation instead of a positive thing.

The other main model is the pay as you go approach, where you pay to download a single comics or collection and that's it. The user has total control.

There are other models emerging like crowd funding, Patreon, Humble bundle, and each has its own advantages.

The survey mainly shows that digital comics consumers are going to use whichever model suits them exactly for that moment, that they are not averse to using all kinds of ways to read comics, and that convenience and quality are often the driving forces, as opposed to price.

Price is however a massive factor when it comes to the service we provide moving forward. Professional comics are expensive to produce per page, so getting a return on that is always going to be a challenge.

It might be that we are not financially able to publish our own comics on a regular basis, and that we instead focus on the platform element of the project, so that others can publish their own. It might be that a partner wants to come in and co-publish with us, in which case the conversations about costings and returns would be had with them too. These are things we cannot really know until we launch and discover the level of interest and engagement with our comic and our platform and tools.

Some things are already clear. When choosing what options we give our creators or consumers in the next phase of development, we must to keep our software and our business open source and transparent for the user, and also flexible enough to change as the market does.

Beta Testing Results

Overall 224 people signed up to take part in the Beta testing phase of the app. Of these, only 66 people provided direct feedback to the project.

One reason for this might have been that Beta Testing allowed a first look at the four comics, so once users had read the comics, they did not then feel the need to give feedback.

BETA TESTING RESULTS.

		Public Pilot 1			Public Pilot 2		
Total Number of		27			39		
How would you rate...		*(Average response out of 10)*					
The app's look and feel?		6.67			7.92		
The apps ease of use?		5.67			7.05		
Your experience using the app?		6.44			7.66		
Big Nemo?		6.65			8.06		
Sway?		6.36			7.33		
Second Sight?		6.00			6.71		
Red Horse?		7.27			7.88		
		(% of respondents)					
		Yes	**No**	**Maybe**	**Yes**	**No**	**Maybe**
Did you find the hint icons helpful?		66.67	33.33		63.64	36.36	
Will you download the app once it is released		81.48	0.00	3.70	79.49	5.13	15.38
Which of these best describes you?		**I Read Comics**	**I Make Comics**		**I Read Comics**	**I Make Comics**	
		85.19	14.81		79.49	20.51	
How often do you purchase digital comics? (% of Respondants)	*Once a Week*	18.52			28.21		
	Once a Month	14.81			17.95		
	Every 2-3 months	29.63			12.82		
	Once a year	3.70			7.69		
	Less often	11.11			12.82		
Age (% of Respondants)	*18-25*	0.00			10.26		
	26-30	3.70			12.82		
	31-40	62.96			51.85		
	41-50	25.93			15.38		
	51-60	3.70			2.56		
	61+	3.70			0.00		

Rating of The App and Comics

The table clearly shows that testers in the second Public Pilot enjoyed using it much more, once some of the issues identified by the first Public Pilot had been worked out, but aside from telling us that Ocasta paid attention to the initial Beta test, what else can we learn from it?

In the first Pilot, when the app had more bugs, Red Horse was the clear favourite. This might have been because the format was easy to navigate, being a single scrolling image; also Big Nemo was not available for the first Pilot.

In the second pilot Big Nemo jumped into the lead, with Red Horse close behind, and Sway and Second Sight scores much improved. This might be because Nemo was suddenly available, or maybe that it had the most impressive art or navigation methods. The improvement across the board shows that all comics had been improved since PP1, or that the enjoyment overall was higher, thanks to the general navigation improvements.

Usefulness of Icons?

66% of both groups found the icons helpful which had been flagged up as something we needed in the first User Testing Session in Brighton. We have four comics which you read four different ways, so icons to give a clue to how you do that are vital.

Would they download the finished App?

Around 80% of both groups said they would download the app once it was released, which is encouraging, given that there is only limited content available for it right now, and we have been open about the fact we do not have an ongoing budget to commission fresh content. This suggests the format is of interest, even without the constant addition of fresh content. Maybe also that the content merits a re-read, or just that the readership consider it part of a collection.

Do they Read Comics or make Comics?

It is fairly safe to assume that anybody who makes comics is likely to also read them, so for creators, we shall assume they do both.

15% of PP1 and 20% of PP2 said they made comics themselves, which is an encouraging sign for the possible audience for the Generator, our comic

creation tool. Getting comic creators on board with the format is as important as acquiring readers.

Spending Habits

When looking at the spending habits of the participants, it helps to put a figure on the individual spends per person, per year, and that of the group who spends with that frequency.

If we give each purchase the same value, of £5 per spend, with the idea that some of them will buy one short digital episode costing £1.50 and some will buy a full Graphic Novel costing £7, then we can compare the value of the two groups in terms of spending power.

Beta Data Analysis.

	% of Pilot Group	No.of People	Price (est)	Buys per Year	Spend per group	Spend per person
PP1	18	4.86	£5	52	£1,263.60	£260.00
	14	3.78	£5	12	£226.80	£60.00
	29	7.83	£5	5	£195.75	£25.00
	3	0.81	£5	1	£4.05	£5.00
	11	2.97	£5	0.5	£7.43	£2.50
PP2	28	10.92	£5	52	£2,839.20	£260.00
	17	6.63	£5	12	£397.80	£60.00
	12	4.68	£5	5	£117.00	£25.00
	7	2.73	£5	1	£13.65	£5.00
	12	4.68	£5	0.5	£11.70	£2.50

PP1				27
Group Spend/Year				£1,697.63
Mean Spend/Year				£62.88
Mode Spend /Year				£25
Two highest % (47 %) spend				£1,459.35

PP2				39
Group Spend/Year				£3,379.35
Mean Spend/Year				£86.65
Mode Spend/Year				£260
Two highest % (45%) spend				£3,237.00

Looking at the spending data above, it's clear that PP1 spends less, per year, as a group, and per person, on digital comics than PP2.

PP2, spends *more than double* the value of PP1, overall.

Also of note, the mode average spend for PP1 is only £25, with 29% of participants maybe buying digital comics every 2-3 months, spending £5 4-6 times a year.

Compare this with PP2, with a mode average spend of £260, with 28% of participants buying a digital comic every week of the year, spending £5 52 times.

Even when you share it out evenly, and give a Mean average for both groups, PP2 still spent £24 more, per person, per year, with £86.65 than PP1 with £62.88.

From the very limited data we have, it is very hard to find a precise *reason* for this discrepancy, but it is possible to look at what we have and put that data next to the Spending data.

Creator/Reader Loyalty

PP1 had 5% fewer creators than PP2, so is it possible that people who make comics are more loyal regular buyers than readers alone? Could the comic readers be buying more casually, less often?

Age Range of Participants

Looking at the first table, the two Pilots both had most of their participants within the 31-40 bracket. PP1 has 10% more in this bracket than PP2, so are these people responsible for the difference in figures? Do people between 31-40 spend less per head on digital comics than other age brackets? The evidence suggests otherwise.

	PP1	PP2
18-25	0.00	10.26
26-30	3.70	12.82
31-40	62.96	51.85
41-50	25.93	15.38
51-60	3.70	2.56
61+	3.70	0.00

	18-30 (%)	31-40(%)	41+(%)
PP1	3.7	63	33
PP2	23.1	52	18

Looking at the second table, we can see that in PP1 even though 63% of participants were 31-40, a further 33% of participants were 41+. Only 3.7% were between 18 and 30.

In PP2 the percentage of participants aged 18-30 leaps to 23.1%, and while 52% are 31-40, only 18% are 40+.

So in PP1, 96% of participants were 31 or older, and in PP2, that drops to 70%.

These figures make a good case for the idea that the uptick in regular weekly spending on digital comics has a correlation with a younger reader group. It's not certain of course but based on this data, it would not be entirely supposition.

If we also consider the higher percentage of creator/readers in PP2, might this point to a younger regular reader of digital comics, who also creates comics themselves? Maybe as opposed to an older comic reader, who does not buy digital comics very often at all?

Even without drawing that conclusion, the spending data as a whole shows 39% of the people who took part are buying digital comics either every week, or every month, spending between £60 and £260 a year per person, using my estimated £5 average spend.

Limitations of this Pilot test

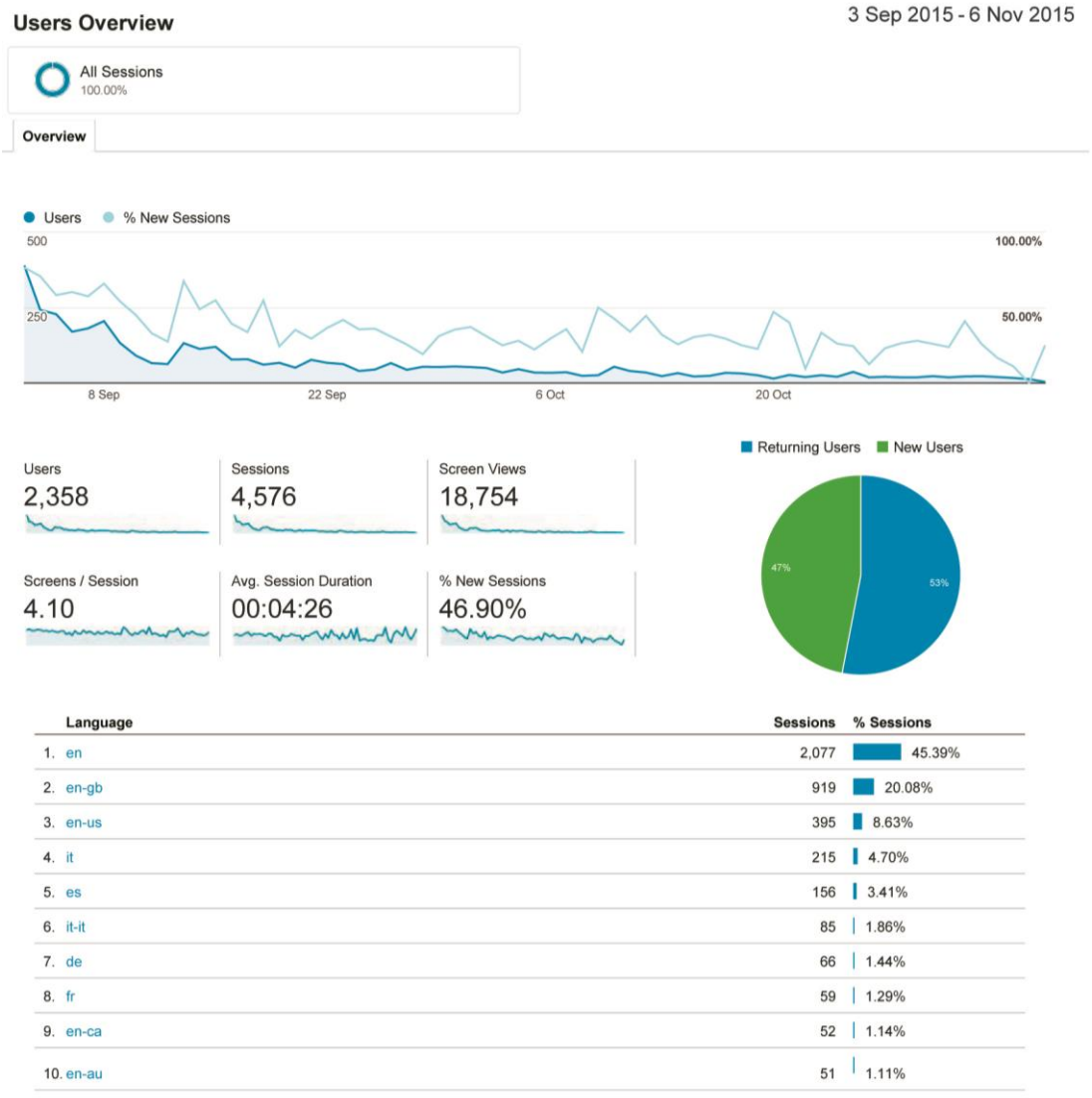
We must of course bear some things in mind, which may affect these results.

- The participants in the Public Pilots were more likely to be digital consumers and therefore digital comics consumers, because they had to have an IPad to test the app.
- This also means that comics readers without iPads were not able to respond, so those using android tablets were excluded from the results. Retesting with Android users would be of benefit.
- This also of course means that people without a tablet of any kind were excluded, so those who buy digital comics and read them on their desktop PC, MAC or phone.

There may be data we can harvest from the broader market survey above to suggest habits of those who read and buy digital comics without owning a tablet of any kind, but these Pilot studies do not contain that data.

Google Analytics

These are taken since Launch on September 3rd to the present Day, and are for the App only, not the website.



Language	Sessions	% Sessions
1. en	2,077	45.39%
2. en-gb	919	20.08%
3. en-us	395	8.63%
4. it	215	4.70%
5. es	156	3.41%
6. it-it	85	1.86%
7. de	66	1.44%
8. fr	59	1.29%
9. en-ca	52	1.14%
10. en-au	51	1.11%

The results below are for screen views, including the most recent additions to the app, which is third party comics, made using the creator tool. The list contains those made for the Halloween Challenge #ElectricomicsChallenge01 and also some I do not recognise, which must be comics people have made but not alerted me to yet. All those in 'Third Party Reader' are other people's comics.

	Screen Name	Screen Views	Views		% Exit
		18,754 % of Total: 100.00% (18,754)	14,766 % of Total: 100.00% (14,766)	00:01:25 Avg for View: 00:01:25 (0.00%)	24.39% Avg for View: 24.39% (0.00%)
1.	Home Screen	**4,573** (24.38%)	4,285 (29.02%)	00:00:22	36.37%
2.	Comic Reader - Big Nemo	**2,713** (14.47%)	1,766 (11.96%)	00:03:16	39.48%
3.	Comic Reader - Electricomics	**1,988** (10.60%)	1,491 (10.10%)	00:01:07	11.67%
4.	Comic Detail Screen - Big Nemo	**1,605** (8.56%)	1,375 (9.31%)	00:00:15	4.05%
5.	Comic Reader - Cabaret Amygdala Presents: Second Sight	**1,425** (7.60%)	836 (5.66%)	00:02:49	32.91%
6.	Comic Reader - Sway	**1,379** (7.35%)	890 (6.03%)	00:02:34	27.41%
7.	Comic Reader - Red Horse	**1,009** (5.38%)	840 (5.69%)	00:02:57	25.87%
8.	Comic Detail Screen - Sway	**923** (4.92%)	792 (5.36%)	00:00:20	4.66%
9.	Comic Detail Screen - Cabaret Amygdala Presents: Second Sight	**884** (4.71%)	750 (5.08%)	00:00:19	4.30%
10.	Comic Detail Screen - Red Horse	**845** (4.51%)	739 (5.00%)	00:00:19	3.31%
11.	Third Party Screen	**603** (3.22%)	418 (2.83%)	00:02:35	17.08%
12.	Icon/Hint Screen	**314** (1.67%)	265 (1.79%)	00:00:41	10.83%
13.	Third Party Reader - Electricomics Comic	**110** (0.59%)	54 (0.37%)	00:04:28	38.18%
14.	Third Party Reader - Grandfather's Hammer	**60** (0.32%)	49 (0.33%)	00:04:00	51.67%
15.	Third Party Reader - The Birds of Twilight Park	**55** (0.29%)	44 (0.30%)	00:04:53	56.36%
16.	Third Party Reader - Mirror Mirror	**36** (0.19%)	24 (0.16%)	00:03:47	25.00%
17.	Third Party Reader - Biblical - Bible Stories for Atheists, Creationists, Rationalists & Rogues	**22** (0.12%)	14 (0.09%)	00:06:03	27.27%
18.	Third Party Reader - Frankenstein's Monster	**22** (0.12%)	17 (0.12%)	00:02:16	31.82%
19.	Third Party Reader - Pure Blood	**22** (0.12%)	10 (0.07%)	00:07:21	22.73%
20.	Third Party Reader - Have You Seen This Man?	**20** (0.11%)	10 (0.07%)	00:07:39	45.00%
21.	Third Party Reader - Monster!	**17** (0.09%)	12 (0.08%)	00:04:17	23.53%
22.	Third Party Reader - The Eagle No 4	**17** (0.09%)	13 (0.09%)	00:01:54	52.94%
23.	Third Party Reader - Electricomic	**13** (0.07%)	6 (0.04%)	00:03:45	15.38%
24.	Third Party Reader - A * is for ASTERION	**12** (0.06%)	10 (0.07%)	00:02:41	58.33%
25.	Third Party Reader - DIE TRÄUME	**12** (0.06%)	10 (0.07%)	00:04:28	33.33%
26.	Third Party Reader - Hello'ween	**11** (0.06%)	6 (0.04%)	00:04:22	27.27%
27.	Third Party Reader - Ontonauts Lost Files: Have You Seen This Man?	**11** (0.06%)	8 (0.05%)	00:03:11	36.36%
28.	Third Party Reader - DIE TRAUME	**9** (0.05%)	2 (0.01%)	00:03:47	0.00%
29.	Third Party Reader - Sleep Well	**9** (0.05%)	7 (0.05%)	00:02:07	22.22%
30.	Third Party Reader - PureBlood	**8** (0.04%)	5 (0.03%)	00:04:02	62.50%
31.	Third Party Reader - Jack	**7** (0.04%)	3 (0.02%)	00:09:33	28.57%
32.	Third Party Reader - The Thorn Wand	**7** (0.04%)	6 (0.04%)	00:08:27	42.86%
33.	Third Party Reader - Polar	**4** (0.02%)	3 (0.02%)	00:01:03	25.00%
34.	Third Party Reader - Electricomics Polar	**2** (0.01%)	1 (0.01%)	00:00:48	0.00%
35.	Third Party Reader - urse Of The Samurai	**2** (0.01%)	1 (0.01%)	00:06:33	0.00%
36.	Third Party Reader - Wandering Aengus	**2** (0.01%)	1 (0.01%)	00:00:36	50.00%
37.	Third Party Reader - AG_test	**1** (0.01%)	1 (0.01%)	00:00:00	100.00%
38.	Third Party Reader - Biblical - Bible Stories for Atheists, Creationists, Rationalists & Rogues.	**1** (0.01%)	1 (0.01%)	00:04:08	0.00%

This is the geographic spread of our users:

Google Analytics

All Mobile App Data

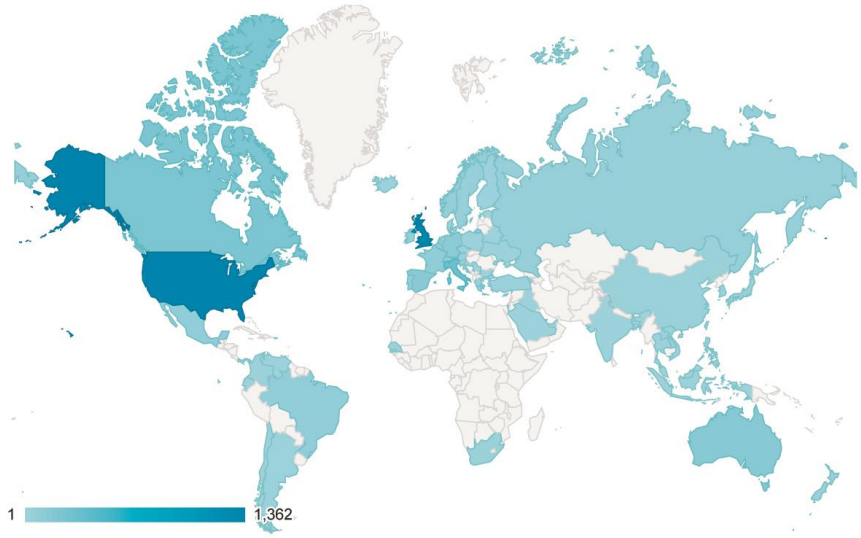
Location

3 Sep 2015 - 6 Nov 2015

All Sessions
100.00%

Map Overlay

Sessions



Country	Sessions	Screen Views	Screens / Session	Avg. Session Duration
	4,576 % of Total: 100.00% (4,576)	18,754 % of Total: 100.00% (18,754)	4.10 Avg for View: 4.10 (0.00%)	00:04:26 Avg for View: 00:04:26 (0.00%)
1. United States	**1,362** (29.76%)	5,487 (29.26%)	4.03	00:04:26
2. United Kingdom	**1,305** (28.52%)	5,286 (28.19%)	4.05	00:04:15
3. Italy	**317** (6.93%)	1,143 (6.09%)	3.61	00:03:14
4. Canada	**210** (4.59%)	731 (3.90%)	3.48	00:02:41
5. Australia	**149** (3.26%)	571 (3.04%)	3.83	00:04:33
6. Spain	**135** (2.95%)	572 (3.05%)	4.24	00:04:35
7. Germany	**114** (2.49%)	514 (2.74%)	4.51	00:05:30
8. France	**85** (1.86%)	442 (2.36%)	5.20	00:07:00
9. Brazil	**78** (1.70%)	382 (2.04%)	4.90	00:05:11
10. Mexico	**77** (1.68%)	338 (1.80%)	4.39	00:04:57

Rows 1 - 10 of 69

Most interesting to note that Italy is above Canada and Australia in this, and the wide spread of users, globally.

Recency

3 Sep 2015 - 6 Nov 2015

All Sessions
100.00%

Distribution

Sessions	Avg. Session Duration	Screens / Session	Goal Conversion Rate
4,576	00:04:26	4.10	0.00%
% of Total: 100.00% (4,576)	Avg for View: 00:04:26 (0.00%)	Avg for View: 4.10 (0.00%)	Avg for View: 0.00% (0.00%)

Days between Sessions	Sessions	Avg. Session Duration	Screens / Session	Goal Conversion Rate
None (First Session)	2,150	00:04:40	4.48	0.00%
< 1 day	789	00:06:21	4.70	0.00%
1	228	00:05:09	4.43	0.00%
2	165	00:03:43	3.75	0.00%
3	108	00:03:45	3.56	0.00%
4	106	00:03:52	3.22	0.00%
5	92	00:04:21	3.92	0.00%
6	86	00:02:35	2.78	0.00%
7	79	00:01:43	3.10	0.00%
8-14	297	00:03:07	3.32	0.00%
15-30	327	00:02:13	2.65	0.00%
31-60	146	00:01:20	2.48	0.00%
61-120	3	00:00:00	1.00	0.00%

We can see here that a lot of people look at the app again that same day, or the next, but also that high numbers have put it down for a week or more, and then looked at it once more.

Loyalty

3 Sep 2015 - 6 Nov 2015

All Sessions
100.00%

Distribution

Sessions	Avg. Session Duration	Screens / Session	Goal Conversion Rate
4,576	00:04:26	4.10	0.00%
% of Total: 100.00% (4,576)	Avg for View: 00:04:26 (0.00%)	Avg for View: 4.10 (0.00%)	Avg for View: 0.00% (0.00%)

Session Instances	Sessions	Avg. Session Duration	Screens / Session	Goal Conversion Rate
1	2,150	00:04:40	4.48	0.00%
2	1,069	00:04:02	4.07	0.00%
3	511	00:03:55	3.65	0.00%
4	261	00:03:06	3.23	0.00%
5	147	00:03:42	3.20	0.00%
6	91	00:02:59	2.68	0.00%
7	58	00:06:41	4.05	0.00%
8	46	00:07:20	3.93	0.00%
9-14	129	00:04:14	3.36	0.00%
15-25	79	00:06:12	3.41	0.00%
26-50	33	00:15:34	6.85	0.00%
51-100	2	00:07:41	4.00	0.00%

The table shows a healthy core of people are using the app, between 9-25 times, which considering the scarcity of content on the app, is quite a lot of revisiting of content.

Insights

The Deliverables

It is important to state up front, at the earliest opportunity, what the deliverables actually are for all parties. If you think the tech team are going to provide you with a deluxe product that has a huge range of features, make sure they are aware of that. Conversely, if they expect to create a very loose Beta build, and you will have to choose features to prioritise, set this out at the start.

- List deliverables for all parties and agree between you a single definition of what those deliverables actual are, and what they consist of.
- If these are unknown as yet, then establish a range of possible outcomes, what features definitely will need to be included, which are unlikely to be achieved within budget/remit.

Keywords

We had several occasions amongst ourselves, and with Nesta itself, where semantics and interpretation of the wording of key documents led to some tense moments of mutual bafflement. Words meant one thing to the tech team, and a completely different thing to the arts lead. Words meant one thing to Nesta, and another to us. This is because researchers, artists, programmers and arts funding bodies all have their own discrete buzzwords, glossaries, slang and definitions for common words in the English language. When things are discussed, it is always worth clarifying what is meant by each thing when you start. It is very much a Tower of Babel situation. Setting out a very basic list of Keywords at the start, with all parties discussing it and chewing it over, is absolutely essential.

Lessons Learned:

- Identify keywords and define their meaning for the project. A project glossary might be a good idea.
- Where a word means two things (e.g. Platform or toolkit) disambiguate the two.

Financial Planning

When we applied, we were so unsure as to whether we would get the funding, we left allocating roles until the funding was approved. Even though our costings allowed for all kinds of activity on the creative and technical sides, there was nothing allocated for administration, management, fees, finance costs, legal costs or license costs. These funds had to be borrowed from directors, or raised from fundraising activities, or found within the arts partner budget, as the technical and research budgets were by that point, fixed and non-negotiable. We also had not taken into account that the technical partner was going to charge us VAT on their fee, meaning that a further 20% of their fee was taken from the overall arts budget before all the above admin and management costings could be discussed. We spoke to two accountants, and one said we should be able to claim the VAT back, and one said we wouldn't.

Lessons Learned:

- Make sure the person who drafts the budget is fully aware of what the likely costs are going to be for the project as a whole, not just the part they are most involved with.
- Get an accountant to go over the planned budget with you, so they can advise you of any issues arising with PAYE earnings, NI payments, VAT or other issues.
- Make sure the Arts person responsible for the finance is able to provide proper cash flow documents from the start, so there are no nasty surprises later on.

Public Relations and Press

This used to mean the person responsible for speaking to the papers. Nowadays it involves creating content for the website, blogs, reports and announcements, overseeing the brands output on social media engines like Twitter, Facebook and Instagram, and recognising which content is suitable for each engine, and keeping the flow of posts coherent to build the overall awareness of the brand. The PR approves comments on the blog, the Facebook page and replies to the tweets. They need to respond to emails and interview requests, and in some cases answer them. They need to make

contact with useful organisations and reach out to make new contacts in their field. They must be the face of the company, and the project.

We were able to get a lot of press on launch, mainly through contacts in the comics press that we already knew, and in the mainstream press, we had some contacts in the arts and culture sections we could use. When we agreed to do the WiredNG event, we asked if when we launched, they would cover it, and they are doing so. We are also doing a "RT and follow to win…" promotion on Twitter, to drum up some exposure leading up to launch, and to keep our brand in people's timelines. We have been building our mailing list over the last year, and have been using it both to get Beta testers, and when we launch, we shall do email campaigns, as well as social media.

Lessons Learned:

- If your organisation already has a press department, or dedicated social media person, then use them. They will already have their eye on what things in the assets would make good social media fodder, and know how to make the internet do the work for them. They will be your new best friend as you gear up to releasing the project.
- If you have access to a photographer either within the company or outside, try and make a bit of budget to get them to come in and shoot the process. Failing that, see if any of the team is a secret camera nerd, and ask them for a favour. Good pictures communicate so much more than just who was at a meeting or a workshop, they show your audience what the feel of your company and product is like.
- If you have contacts from a previous project, use them. Don't be shy. A polite email asking if they might be able to help, is never going to be a bad idea, they might have a contact that can solve your problem.

Future

We will be setting up a Community Interest Company, which will continue the Electricomics Project, and improve and build on it, in ways that most benefit the people using it.

To this end the aim is to complete and maintain a whole ecosystem for Electricomics while allowing third parties to extend and adapt its components in ways that benefit them.

We would very much like it if Electricomics files became the new easily editable content for people to embed in their websites and social media pages, in the way Youtube is now. A blank but very flexible canvas which people can use to tell their own stories, without being reliant on publishers or industry constraints. This is not done purely from philanthropic motivation, more that comics should be a form and a medium and not simply an industry. We would like the timeless immersive and limitlessly flexible form of comics to be available to all.

The Creator Tool and JavaScript library will be open source, meaning that other people will be able to code functionality for it and improve the initial build as a community project. Hopefully we will see uptake of the tool being used for creators own digital comics, and we want to reach out to non-comics partners and user test both the app and the creator tool within an 'Aunty Betty' environment. This should iron out any non-obvious problems with the interface that might rely on a comics literate user group.

The Reader application will be developed for other platforms while publishing the Electricomics standards will allow others to create their own alternative readers. Eventually this will include support for reading in the browser, so finally reaching all devices everywhere.

The last item to complete the ecosystem will be the Marketplace that allows any publisher of any size to create their own Electricomics and distribute them while retaining ownership and being able to generate income if they wish.

To support this development work we plan to reach out to possible funding partners, publishers or even other developers if they are interested in bringing expertise to the project. Instead of viewing the other digital comics

providers and innovators as competitors, we very much see them as colleagues, all pushing toward a mutually beneficial goal, of bringing the medium of comics up to date, in the way that film, animation and gaming have all been updated over the years.

The new company does plan to create further professional Electricomics, but only for the purposes of pushing forward ways of telling stories in digital comics. Eventually as a community supporter we would prefer to support independent producers to create their own innovative work. This will allow Electricomics to stay neutral across all comic producers and work for the benefit of all, encouraging publishing in different languages at once, and options to bring digital comics to a broader audience globally.

If another organisation wanted to replicate the whole project, they would need somebody in editorial control of the scripts art and other creative processes, and who has enough industry contacts to make sure they can find suitable people for the various roles, and replacements should they need them.

They would also need somebody in the arts organisation who is totally familiar with contracts and finance, and is able to back the project up with budgetary advice, cash flow information and basic contract law surrounding IP and copyright. With these two roles filled, and a tight rein on the budget, the arts side of it would be secure.

A technical partner with a strong graphics background would be a necessity, due to the large amounts of image manipulation required. Animation experience would also be a must. The final requirement for the technical team is an iterative approach, whereby builds are created quickly and tested and then improved. For the research partner, they would need a hands-on approach to the research, and a general all round understanding of the principles in the comics form and industry. Research practitioners would be most suited to these roles.

What would convince our organisation to invest in R&D would be the unique combination of methodologies from different disciplines, each able to inform and respond to the other. Without our research partners we would not have had any background, or academic structure to our work, we would have found prioritising our workload much harder, and the results of that work, much harder to quantify. Without the technical partner working alongside

us, we wouldn't know the reasons such a thing was possible but another thing wasn't. We wouldn't know the possibilities for expansion and improvement, and we wouldn't have a solid framework in place to allow our organisation to be agile and responsive to changes in technology and the comics industry itself.

R&D is difficult stressful, and unpredictable, but the process tests not just the creative or technical capacity of the partners involved, it challenges them to think laterally, to think within unfamiliar confines, and to examine their process throughout.

Further Resources

Resources for creators

A great general resource is http://www.makingcomics.com/ which has a huge database of links to everything from legal advice to image manipulation tools.

There are resources specifically for digital comickers on the site, all collected on the 'Distribution' page.

There are also more links to helpful tools in Tools and guidance.

If you want your digital comic to be put out by an actual publisher, there are a few options.

Comixology has 'Comixology Submit' which lets you submit your comics to be published by them, and they will transform your comic using their technicians, and then split the sales of the book with you.

They also put out huge back catalogues of Marvel and DC and many more.

Sequential currently publishes graphic novels from several publishers including Dark horse, Knockabout, and IDW. They do not currently publish titles under their own imprint.

There is one major player in the digital comics boom, that have already pushed further and tried harder to make something uniquely digital, than any other company.

Madefire set up by Ben Abernathy and Liam Sharp, released a reader app, a raft of comics titles by giants of the industry and, crucially, their 'Motion Book Tool', all with the tagline "A revolution in digital comics".

The Motion Book Tool, is a web platform that is free to use, beyond creating an account, and enables people to create motion comics, as well as publish them to the Madefire iOS application, on the deviantArt platform or on the user's' own website. However, the motion comics that can be created rely on a fixed formula of development, using a timeline of tap commands, whereby the user creates a sequence of images, and then the reader taps to bring up the next image in the sequence.

The tool allows you to make your own motion books, and then you can publish them, either by embedding a URL into your website, or via DeviantArt who have partnered up with Madefire. The tool is free, and using Deviantart is free.

They also put out their own stable of comics under the Madefire imprint, and a huge raft of comics from other companies.They are without doubt the most sophisticated digital publisher in the market right now, allowing professionals to be published, and allowing any creator to make and distribute their own comics.

Further project information

www.electricomics.net

www.facebook.com/electricomics

www.twitter.com/electricomics

www.instagram.com/electricomics

Tools and guidance

http://www.madefire.com/motion-book-tool/ Madefire's own motion book tool

http://www.gimp.org/ Gimp free drawing/image editing tool

http://www.inkscape.org/en/ Inkscape free art tool

https://krita.org/ Krita free art tool.

http://chogger.com/ basic all ages comic creation tool with balloons.

http://www.makeuseof.com/ a good guide to starting your own webcomic.

http://tumult.com/hype/ Create beautiful HTML5 web content. interactive web content and animations

http://www.makeuseof.com/tag/4-amazingly-impressive-html5-web-comics/ HTML5 web comics

https://liber.io eBook Publishing

https://webmaker.org/en-US/tools Firefox Webmaker tools

Further reading

In identifying the underlying processes of the form, our research has drawn on both comics theorist-practitioners such as McCloud and also on comics theorists such as Groensteen, Cohn, Hague and Miodrag. McCloud's work on the infinite canvas (2000: 222), representations of time in comics (1993: 94) and the interrelation of text and image (1993: 153) are key elements that touch on several aspects of our study. Cohn's work provides a useful extension and critique of McCloud's theories (2013) and contributes important ideas on the representation of time in visual language (2010). Groensteen explores several fundamental tropes and introduces the idea of comics as a spatial network (2007, 146).

In Groensteen's later writing he specifically addresses the digital remediation of the form and the integration into comics of audible, time-based soundtracks (2013, 63). Hague provides further detailed examination of the relationship between comics and sound (2014, 63) while Miodrag extends the discussion of comics as network and further explores the nature of their visual language (2013). Goodbrey's study of the hypercomic form (2013a) and the tools and tropes of digital comics (2013b) have been important touchstones, while Priego (2011) provides a useful overview of digital comics as a whole.

In examining the digital remediation and extension of the comics page, there are several media theorists whose work is of importance to our study. Bolter and Grusin's concepts of immediacy and hypermediacy (2000) are important in understanding the fundamental processes of digital remediation. Nelson's groundbreaking work on hypermedia (1974) provides the original template for the hypercomic form, while theorists such as Landow (1997) provide the conceptual framework for discussion of the form. Our analysis of digital comics is informed by Aarseth's writing on ergodic literature (1997) which introduces key concepts such as tmesis and aporia/epiphany. Murray (1997) contributes ideas on transformation, immersion, agency, procedurality and spatiality in interactive narratives. Juul's examination of time in videogames

(2005) was also of use in developing our understanding of the reader's relationship to time and pacing in digital comics.

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Other Examples

Other projects, organisations or activities that may interest readers. This might include other projects funded through the Digital R&D Fund, projects in other countries or in other industries.

Boulet

Atelier Capsule

http://famous.org

http://thrillbent.com

Media coverage of the project

Coverage from initial launch:

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More recent coverage:

http://www.bleedingcool.com/2014/12/01/cracking-the-tower-of-babel-to-make-electricomics-leah-moore-in-the-bleeding-cool-interview-at-thought-bubble/

http://www.adistantsoil.com/2014/12/03/alan-moore-and-electricomics-feature-at-bleeding-cool/

http://www.londonbookfair.co.uk/en/Contributors/631320/Leah-Moore

review in http://theguardian.com

piece in Wired

Leah Moore appeared on the awesome comics podcast

Alan Moore interviewed in bleeding cool

Electricomics are off to pixelatl

Glossary & Abbreviations

Accelerometer	A hardware chip designed to detect movement
Ambient Sound	A constant background soundscape used to give a digital comic its own ambience.
App	The application that fetches the content from the server to display on the device.
Balloon	Used for dialogue with the shape, colour and layout, font adding to whole page.
Canvas	A single large area, across which all the panels of a story are laid out. A big Page.
Caption	A box where the writer can put narration, reported speech, or date/time info.
Choose Your Own Adventure	A story where there are choice points, and the reader decides which way to go, and so what story they read. See Multi-Cursal Story.
Colourist	The artist who colours the inked pages and often also applies shading, lighting, textures, special effects such as glowing, blurring etc. Sometimes artists colour their own artwork, but commonly the job is divided up.
Column	A vertical stack of panels. A dense comic might have three or more per page.
Comic	A sequential narrative using pictures and words, but also animation, sound, links.
Creator Tool	The software that allows the public to put their art in, and get a file readable in the app.

Delivery	The way your digital comic will be read. See Panel Delivery, Side Scrolling, Infinite Canvas, Motion comic.
Digital Native	A comic produced specifically for a digital device, that would not work in paper form.
Ecosystem	The complete set of softwares that allow you to make read and publish a digital comic.
Graphic Novel	A purpose written book, consisting of one long story, in comic form.
Guided View	A digital comic which takes you through the panels in a set way.
HTML5	Hypertext Markup Language, the core standard of the web.
Infinite Canvas	A digital page or canvas, with no visible edges. As large as you want it to be. Can be used to tell stories of any size or length or scope.
Inker	The artist who draws over the pencil lines to refine and finish the page. A lot of times, an artist will both pencil and ink, but for many reasons the jobs can be divided.
iOS	Apple operating system for phones and tablets
Issue	An episode of a longer story, or a collection of smaller stories in an anthology.
JavaScript	A scripting language used in web pages
Java Script Library	The collection of pieces of code that perform specific functions within a comic.
Layout	The arrangement of panels on a page of comic.
Mini series	A short story told over a few issues, maybe three or four.

Motion Comic	A digital comic which features animation to progress the story from one panel or page to another.
Multi- Cursal Story	A story with more than one strand to its story. There is more than one way to progress through the story.
One shot	A single issue standalone story where **no** other comics need to be read.
Ongoing Series	A long running series where no specific endpoint is defined.
Orientation	Whether a comic is landscape/horizontal, or portrait/vertical
Page	A group of panels, which then is replaced by a new group of panels.
Panel	A single image of whatever size, which you read in sequence with other panels.
Panel Delivery	A digital comic read panel at a time, as they appear on screen.
Parallax	The slight movement of layers of a scene when the reader scrolls past them to give a sensation of depth.
Penciller	The artist who draws the pages out in pencil, from the script.
Platform	1. The OS you are building your software in, eg: Windows/iOS 2. The website and app with which you and your audience can share content.
Scene	A collection of panels or pages that comprise a single piece of action within the story.
Script	The document a writer produces to tell the artist what to draw. Artists who write their own stories sometimes write themselves a script to block out the pages and dialogue before they draw. Scripts can be brief (Marvel Style) or really (Full Script).

Series	A story told over a number of issues.
Side Scrolling	A comic that scrolls horizontally, like a tracking shot in film.
Spot FX	A sound or lettered effect that happens when something happens in the story: POW!
Spread	Two facing pages of a print comic. Hard to achieve in digital.
Step	An event. A panel, or an element that changes, or a balloon, an animation etc.
Tier	A horizontal row of panels, or a single wide panel.
Toolkit	A collection of pieces of software, which can be used together.
Trade Paperback	A soft cover, long-form comic book. Sometimes this could be a Graphic Novel, or a collected series. Some, like Watchmen, are both.
Transition	How you get from one step to the next. Cinematic cuts, hyperlink hotspots.
Turn over	The transition, in paper from one page to the next, used for reveals and change of scene. This is more complex in digital.

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Team Members

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