

IMPACT OF 3D OBJECTS IN MOBILE MARKET RESEARCH

INNOVATIVE APP-BASED MOBILE RESEARCH

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INTRODUCTION

Mobiles are being talked about as the future of MR increasingly and there are even dedicated Mobile Market Research conferences being held globally on Mobile MR. Mobile is coming out of its digital shell to be reckoned as a market research channel and method in its own right. This poses the usual challenges of comparing data by other methods, migration challenges, norms, education, budgets and many others both from a business and logistically angle.

What it also gives us is an opportunity to start with a clean slate and try things never been tried before. This paper highlights one such area of opportunity within the mobile space which Mobile-Measure worked on with a partner to highlight how it could positively enhance research results and consumer experiences. The area we explored was Mobile 3D for Market Research and how it has application in measuring choices consumers make in selection of products and packaging feedback.

In Shanghai, China; MobileMeasure executed a 3D project to bring to mobile life a powerful new technology solution for mobiles to utilize its application effectively in Market Research. The solution was powered by Mobile-Measure's 3D Insight platform.

This exciting paper reveals an innovative mobile technology's potential to revolutionise the speed and quality of both insights delivery for research where the product is not yet physically ready but the form and packaging is visualised in 3D for consumers to interact and give feedback.

INDUSTRIAL APPLICATION AND GAMING LEADS THE WAY

The origins of 3D animation are far from entertainment and lie with industries like Auto, Aviation, Defense and machine tool industries. However when it comes to consumer interaction with 3D graphics it's been the entertainment, advertising and gaming industries that bring these technologies to consumers.

When it comes to cutting edge creativity or graphics using technology, the Advertising and Communication industry have been followers. The true innovators and leaders are the Entertainment and Gaming industry which has consistently led the way.

3D in the movie industry really got a boost with the movie Avatar in 2010 and that further fueled its viewership in homes and the growth of Blu-ray technologies as well. The gaming industry's most successful franchises spend millions to ensure their billions keep rolling in and 3D graphics were the most important and visible upgrades. The console devices graphics have the advantage of being backed by powerful hardware devices allowing for heavy and detailed images allowing for a very intense experience for the user. The portable and mobile devices were largely ignored for high quality 3D graphics as the memory and hardware requirements eliminated them as suitable for 3D.

3D in portable devices has been talked about and been on offer for over 20 years and there are a slew of failed attempts littered all around us, the most famous of which was Nintendo's Virtual Boy. This was mainly due to poor rendering of 3D images giving users a sloppy experience.

The iPhone was the booster engine the industry needed with the launch of a platform which brought in developers in hoards to compete against each other and grow innovation in a short span of time. The result is that 3D today is far more commonplace and can be found across different application covering a multitude of applications from industry simulations, demos, product marketing, education and of course gaming.

Today with large screens and dual core phones almost becoming the norm for new phones being launched, 3D graphics is getting a much wider berth and exposure across users. Despite all these developments and spread of 3D; 3D graphic based apps and solutions are still considered expensive and are restricted by both the cost of production of 3D solutions and also skill availability to a more limited extent.

3D GRAPHICS AND MOBILE 3D

3D computer graphics (in contrast to 2D computer graphics) are graphics that use a three-dimensional representation of geometric data (often Cartesian) that is stored in the computer for the purposes of performing calculations and rendering 2D images. Such images may be stored for viewing later or displayed in real-time.
Source : www.wikipedia.org

In simple terms 3D graphics is the enhanced visibility of an object to simulate its 3D character like realistic rendering of an object's angles, shadows and shape.

The process of building 3D images are as follows:

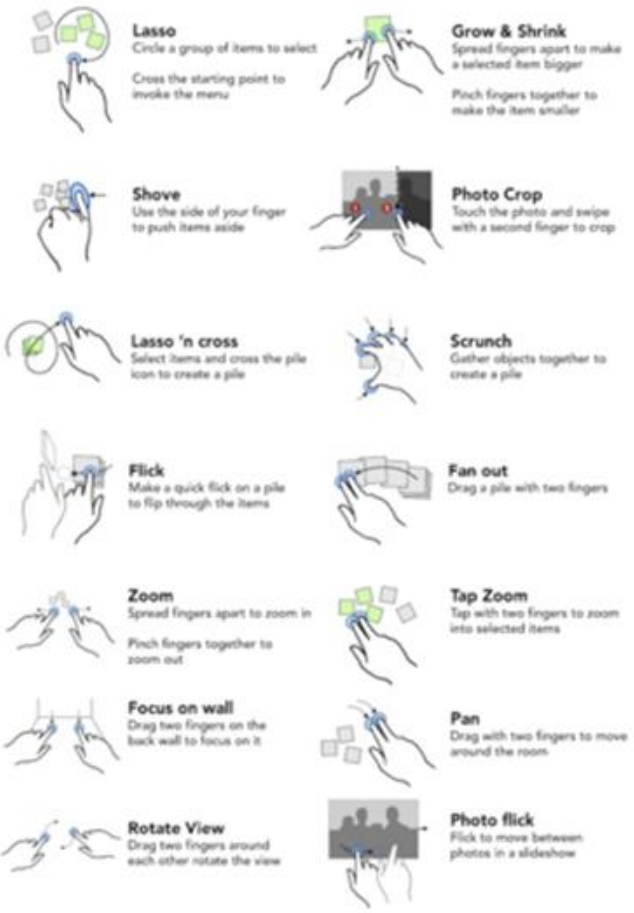
1. Rendering - Graphic rendering of an object to cover multiple angles / lighting of an object. Rendering means the preparation of multiple images of an object to cover multiple angles and visualization effects like shadows and light.
2. 3D Model – rendered graphics by themselves however are not sufficient and need to be displayed via a 3D model. The 3D models are the mathematical sequence or mathematical definition of the rendered images. The 3D model defines how the 3D image is displayed to the user during movements or manipulations of the 3D object being used.
3. Preparing Rendered Graphics
   - One way of preparing rendered graphics is to use photographs of the object from various angles. The more angles available the better the quality. The 3D model then simulates and creates additional angles and shadows and lighting effects can also be added as required.
   - Another method of preparing is to use a single image and then define the type of 3D object required in the engine and create a simulated 3D object.
4. Flexibility of 3D Models – the 3D models in use by developers today are very advanced and can be allowed to be very flexible or inflexible as required. For example when doing a 3D image of furniture or a car the 3D objects will move in a single plane and not be able to be lifted up and down, but on the floor or road/ground level can move and rotate in any direction. While making a 3D object of a beverage can the 3D image can be allowed to be rotated turned sideways, upside down, lifted up or down or any which way.
5. Navigation – 3D models also allow you to define how the 3D object can be manipulated within the mobile. Different finger gestures would achieve different movement of the object. These gestures are for multi touch screen devices to ensure users get the most out of the 3D navigation. A few of the most common gestures used are illustrated in figure 1.

FIGURE 1, COMMON 3D GESTURES

Source: http://www.ipadnews.nl/2011/10/13/maide-control-%e2%80%93-a-simple-collaborative-3d-control-for-ipad/

A more exhaustive list is provided in figure 2, however it is important to note that as technologies like mobile 3D go; it's always evolving for the better.

FIGURE 2, MORE 3D GESTURES



Source: http://gizmodo.com/5371913/bumptop-3d-desktop-gets-unique-multi+touch-gestures

It is important to note that the above gestures are some of the more common, however there are no fixed standards for defining gesture commands. While designing the user experience engineers can define it as required and it often changes post usability testing done with consumers.

3D UTILITY AND MR

When it comes to technology Market Research has been traditionally slow in adoption. If we look at online, social and now mobile, Market Research has not played as proactive a role as we would have liked in its adoption industry wide. 3D mobile technology is relatively new for all industries across the board and it gives researchers an opportunity to be at the cutting edge of a technology before others can fully grasp its potential.

3D in gaming clearly enhances the user's experience and enjoyment while playing games. 3D imagery makes the experience more realistic and engaging. Using this premise we explored how we could enhance both user experience and the resulting data using 3D objects for a MR study.

THE CASE STUDY

We began with the hypothesis that we can enhance the experience of users by interacting with a virtual product on their personal mobile devices to help the client obtain insights before the actual production of the product's final packaging.

We used MM's 3D insight mobile platform. The platform allows for users to be invited to download the MM 3D Insight mobile app. The downloaded app had a set of three 3D product / objects embedded within it of the client's product. This allows respondents to view the 3D objects, enlarge or minimize the product and also rotate the product to see different angles and sides of the object as if it was a real object. All this manipulation of the object is done using their fingers (as the phones are touch screen) as if you were using a real 3D object.

We tasked the respondents with visiting a beverage store of their choice and photographing a beverage rack or cooler within that store. After taking the photo the respondent was asked to select three 3D beverages within the App and place them anywhere in the rack / cooler as they saw fit.

The placement of the objects within the cooler was also followed by a mobile questionnaire to gauge their product facing preferences. A F2F interaction also took place to understand why certain placement choices of convenience and preference were made.

Adding mobile to the research delivery mix not only improves efficiencies, it also helps us put the respondent at the centre of the point of consumption/purchase.

The project was divided into multiple parts as given below:

1. Preparation and material
    - Mock ups of packaging in 3D
    - Rendering of 3D products for 3D modeling
    - Mobile questionnaire [design of instructions, structure and flow of data collection within app]
2. Testing and pilots
3. Project execution
    - Recruitment invites via SMS
    - Respondents download app
    - Respondent reads instructions for three-part survey
4. Respondent Experience and Flow
    - Welcome screen and instructions
    - Screen capturing basic demographic information
    - Part 1 : Respondent tasked with visiting a store and taking a photograph using the viewfinder of a retail cooler stocked with cans of beverages
    - Part 2: Respondent has to select three of client's beverage cans and place them where the respondent feels is most likely to be seen / picked up. User also has to choose the facing [which side of the can should be seen by when placed in the cooler].
    - Part 3: Respondent answers a short questionnaire [five questions each; four close ended and one open ended] on each of the two designs within the new designed beverage can. The can's cylinder is divided into two half each with a different design.
5. Respondent saves and uploads :
    - A photo of a cooler with 3D images of the three cans placed within them;
    - Survey answers for both design facings;
    - Upload success and thank you message.
6. F2F follow up: Some of the respondents were interviewed in person after their inputs for a better understanding of the responses for the final report to the client.

This project was executed with a samples of 15 respondents and was only supplementary to multiple studies to identify the best beverage can design change being considered by the client. On a positive note the recommendation of our study was in line with the other parallel studies.

CONCLUSION AND THE FUTURE OF 3D IN MR

Based on the pilot study we conducted we had some learnings and feedback which we felt would be key to the future of using this technology:

1. The high creative production value achieved ensured not only a high quality experience for the respondents but the data and feedback was very good. This ensured that the respondents were willing to do this again as they found it fun and from the client's perspective the data was of a very high quality.
2. We found that the execution time for the 3D solution was considered too long by the client. The preparation of the 3D object for use in the 3D engine took us three weeks after receiving all the design material from the client. We would be able to get this time down to two weeks as things stand today.
3. Rendering of 3D objects for the 3D engine is considerably pricey. Especially if we did a project with multiple images both the production time and costs would be considerably more.
4. If the production values [good quality images and user experience] were sacrificed then the results also would suffer considerably, therefore saving in the design and rendering costs cannot be made.
5. Adding the photo capture module and linking it to real life retail scenario to capture data was highly appreciated.

6. Making 3D images of a sphere, cylinder and similar objects with curved sides are much harder to render and prepare for 3D engines, mainly because the images required for the engine are so much more. This then reflects on the size of the 3D images as well making them much larger [file sizes] than a box or other straight line shapes. Shadows and lighting effect also need more detailing and if not done well look unrealistic and not smooth.

This project helped MobileMeasure successfully demonstrate the ability and benefits of 3D mobile as a research tool.

The beauty of mobile as a research tool is that consumers enjoy utilizing it! There is an unparalleled fit between the research design and their everyday behavior. Adding utility of the mobile camera to capture real life images and mesh that with the research objective was a powerful way to get close to real retail scenarios.

From a future perspective the rapid growth of mobile technology to enhance the Market Research experience of consumers to add depth of insights and client value is a pretty wide white space needing much exploration and patience to ensure we all benefit when these technologies become common place.

The question therefore needs to be asked – are we as an industry doing enough now with an eye on the future?

THE AUTHOR

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