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Examining Mobile Print-on-Demand as an Alternative to Image Licensing for Monetising Digitisation to Promote OpenGLAM

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Abstract

Although studies have demonstrated that OpenGLAM provides numerous benefits to participant institutions, such as the dissemination of collections and increased sponsorship opportunities (Kapsalis, 2016; Kelly, 2013), the movement's adoption remains limited. For museums and galleries, the fear of losing image fees, poses as one of the main barriers for participation (Kapsalis, 2016), since image licensing remains the most widely adopted method for monetising digitisation, despite the fact that its profitability has repeatedly been questioned (Tanner, 2004; Grosvenor, 2018). On-demand printing provides an alternative for generating revenue from digitised collections; however, print-on-demand solutions for museums appear to have stalled in the last decade, remaining almost exclusively a privilege of the well-resourced institutions. A

radically different implementation that takes advantage of emerging technologies (i.e. image recognition and progressive web applications) to provide a mobile print-on-demand solution for all museums with digitised collections is the Infinite Museum Store (IMS). In (Valeonti et al., 2018a) we presented the technical aspects and innovation features of IMS, as well as the results of a pilot study held at the State Museum of Contemporary Art (SMCA) in Thessaloniki, Greece, which demonstrated a significant potential for generating revenue from digitisation. Based on IMS, this paper examines mobile print-on-demand as an alternative solution for monetising digitisation, also exploring ways that smaller, not as well-resourced museums, can take advantage of on-demand printing to generate revenue from their digitised collections. With museums claiming that it is a "challenge . . . to keep on top of the large numbers of [image] requests" (Smith, 2009), developing alternative ways to monetise digitisation would not only allow more institutions to join OpenGLAM, but it would also contribute to improving their profitability.

Keywords: Open Access, OpenGLAM, Revenue generation, Digitised collections, Mobile, Print-on-Demand, rights and permissions

Introduction: Image licensing and the Monetisation of Digitised Collections

The Emergence of OpenGLAM and the Barrier of Image Licensing

OpenGLAM is a movement in the cultural heritage sector promoting "free and open access to digital cultural heritage held by Galleries, Libraries, Archives and Museums" (OpenGLAM, 2019a). In order to participate in OpenGLAM, institutions must "keep digital representations of works for which copyright has expired (public domain [works]) in the public domain by not adding new rights to them" (OpenGLAM, 2019b). Also referred to as open access, or open content, the OpenGLAM movement was pioneered by the Rijksmuseum in Amsterdam, which was the first museum in 2011 to open up access to its collections, providing free-of-charge digital representations for thousands of works in its

collection, actively encouraging everyone to obtain and reuse them (Terras, 2015). The emergence of the OpenGLAM movement has greatly challenged the norm, because art institutions have traditionally sought full control over their digitised collections, in order to earn image licensing revenues and track image reuse (Tanner, 2004). However, with studies demonstrating the movement's benefits, such as the dissemination of collections and increased funding opportunities (Kapsalis, 2016) and also with institutions increasingly seeking to “maintain their relevance in today's digital society” (Verwayen et al., 2011), numerous museums have followed the Rijksmuseum's lead.

Despite the fact that OpenGLAM has been gaining momentum (Figure 1), its adoption remains limited, since only thirteen art museums and galleries are currently part of OpenGLAM (Table 1). Low adoption could be credited firstly to the significant effort required by institutions to set up the infrastructure that will provide the organisation's images to the public (Jaebker, 2015). Beyond the practical and technical aspects of participation, the main barriers that have been identified as the reasons preventing institutions from joining the OpenGLAM movement are the loss of control over image reuse and also the loss of image fees (Kelly, 2013; Sanderhoff, 2013; Tanner, 2004). However, given that the “loss of control fades as a concern” (Kelly, 2013), the fear of losing image licensing revenue poses as the main barrier for participation (Kapsalis, 2016; Moore, 2017).

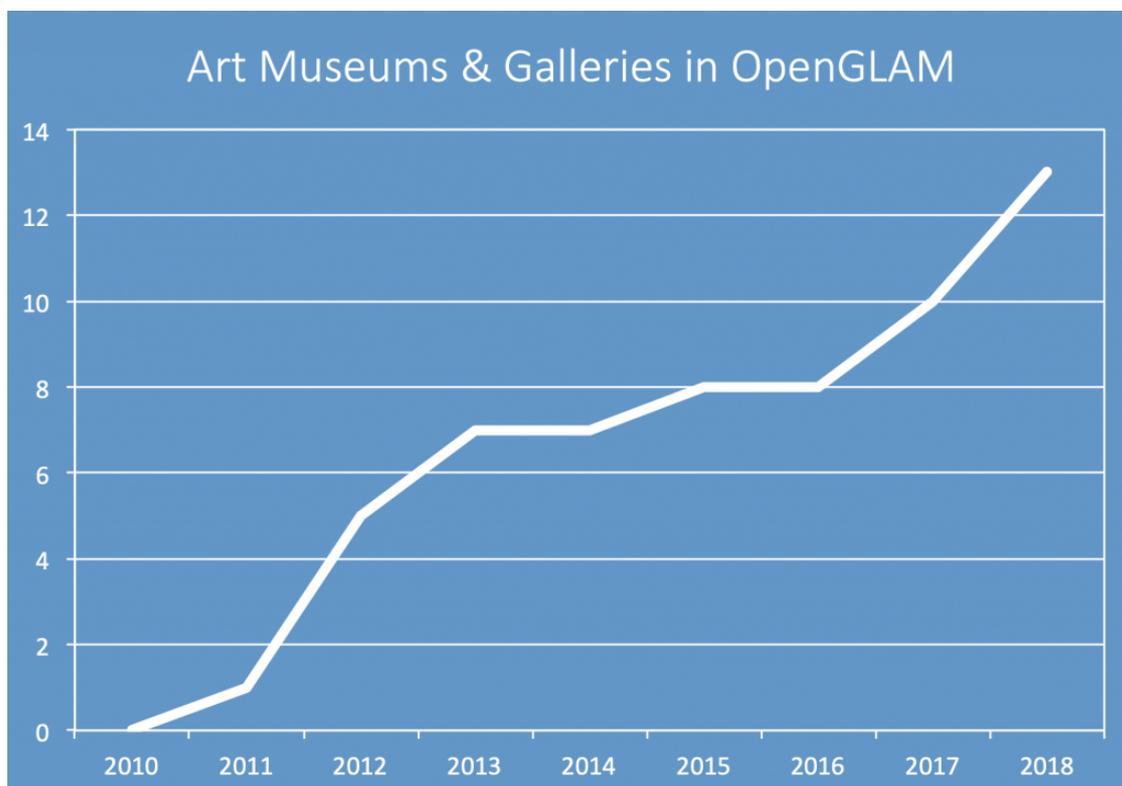


Figure 1: Participation of art museums and galleries in OpenGLAM

Digitised Collections as an Under-utilised Resource for Revenue Generation

Image licensing is arguably the most widely adopted method for monetising digitised collections. The widespread wave of digitisation in Europe and internationally, with initiatives such as Europeana, investing millions every year for digitising museum collections (Europeana, 2014), has resulted in thousands of museums now owning a significant wealth of data, i.e. their digitised collections. With the financial challenges of cultural heritage institutions steadily increasing in the last few years (Valeonti et al., 2018a), it can be argued that, as a resource, digitised collections are currently underutilised with regards to revenue generation; at present, monetisation is limited mostly to image fees, with museums either selling image licenses directly and processing requests in-house or outsourcing operations to companies such as Bridgeman Images.

List of art museums and galleries in OpenGLAM

Rijksmuseum

Yale Institute of Art

Walters Art Museum

National Gallery of Art, Washington

National Gallery of Denmark (SMK)

J. Paul Getty Museum

Los Angeles Museum of Contemporary Art

Indianapolis Museum of Art

Metropolitan Museum of Art

Barnes Foundation

Finnish National Gallery

Chicago Institute of Art

Belvedere Museum

Table 1: Art museums and galleries in OpenGLAM

Print-on-Demand Kiosks: An Expensive Alternative

An alternative for generating revenue from digitisation is “print-on-demand,” a service pioneered in the museum sector by the National Gallery in London (Simal, 2005). In 2003, in collaboration with Hewlett Packard, the National Gallery was the first cultural heritage institution to allow its visitors to order a reproduction of any painting from its permanent collection (Simal, 2005). In his paper describing the project, Jorge Simal outlined the key benefits of print-on-demand for museums. The main advantage according to Simal is that “no

storage, transportation or management of stocks . . . is required”, since “posters are only printed once a customer has placed an order and paid for them” (Simal, 2005). Among other benefits he included were “improved service to the community,” since the service offers students and researchers reproductions of all of the Gallery’s masterpieces (Simal, 2005).

To implement on-demand printing in 2003, Hewlett Packard had equipped the National Gallery with large-format printers, as well as with technology developed by HP’s Inkjet Commercial Division (Simal, 2005). In addition, Hewlett Packard had also undertaken the digitisation of the National Gallery’s collection from 1998 to 2003 (Simal, 2005). The cost for utilising print-on-demand was prohibitive at the time; however, a few years later, the service had already made its appearance in other well-resourced museums. In 2009, the V&A in London was reporting revenues from its print-on-demand kiosk (Smith, 2009), whilst in 2010, MoMA had also installed a similar kiosk as well (Figure 2).



Figure 2: Print-on-demand kiosk at MoMA in 2010
(Emmons, 2010)

Rethinking Print-on-Demand for Museums

A decade later, much has changed in terms of resources and tools museums now have at their disposal. Firstly, as mentioned previously, a large number of cultural heritage institutions have already digitised their collections, which is a mandatory requirement for on-demand printing. More importantly, print-on-demand providers—besides the fact that they now offer a wide range of customisable products beyond prints, such as t-shirts and smartphone cases—they have become more accessible than ever in terms of pricing and simplicity of integration. Nowadays, companies such as Printful and Scalable Press undertake white-label outsourcing of print-on-demand operations, whilst

providing a range of pre-configured integrations with popular e-commerce platforms such as Shopify and WooCommerce to eliminate the technical knowledge required for the initial setup. Lastly, the number of print-on-demand suppliers is steadily increasing, driving prices downward, resulting to an ever-increasing quality of products and services at an ever-decreasing price for museums and galleries (Valeonti et al., 2018b).

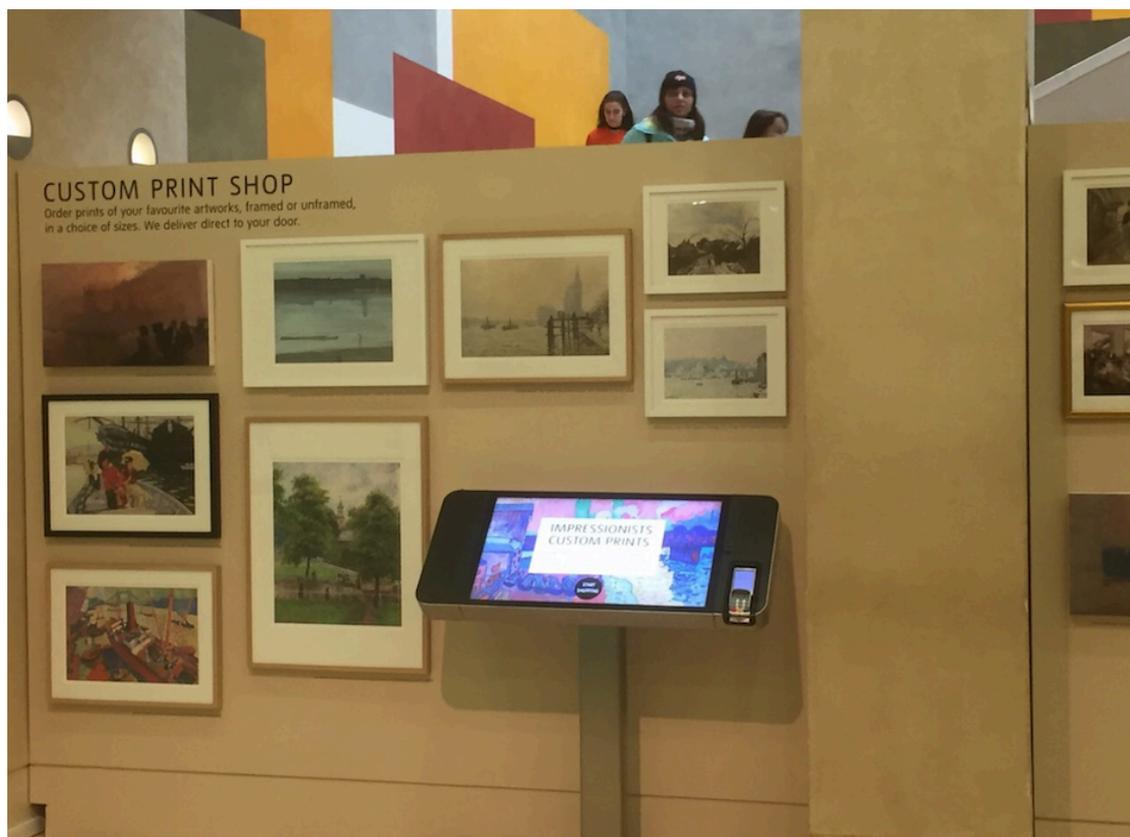


Figure 3: Print-on-Demand kiosk in Tate Britain in 2018

Despite the significant progress made in the industry of on-demand printing, print-on-demand for museums appears to have stalled in the last decade; on-site print-on-demand appears to have received incremental improvements only, e.g. larger touchscreens and contactless card payments (Figure 3); more importantly, it can still be found almost exclusively at well-resourced

institutions. In its current kiosk-based format, on-site print-on-demand remains prohibitively expensive for smaller museums, as such booths require not only custom hardware, but also custom software, and the costs of purchasing and also maintaining such solutions are not negligible (Valeonti et al., 2018b). The “primary advantage” of print-on-demand has always been that prints and other items “are produced as they are needed” (Larsson, 2004). Following also the recent developments in the industry, all orders can now be fully processed on-demand by the aforementioned providers. Subsequently, museums can now pay for orders only after they receive payments from their customers. As a result, arguably one of the greatest benefits of print-on-demand is that it no longer requires any sizeable upfront financial investment to start generating sales and revenue.

The advent of the mobile Internet and the ubiquity of smartphone devices in combination with the advancements made in the print-on-demand industry mentioned previously have created new opportunities for generating revenue from digitised collections. This paper explores ways technical innovation, and in particular mobile print-on-demand, can be utilised as an alternative source of revenue from digitised collections, i.e. other than image licensing. Developing alternative ways for rectifying lost image fees can contribute toward addressing one of the key barriers for adopting OpenGLAM, significantly promoting the movement’s adoption.

IMS: Mobile Print-on-Demand for Museums

In the paper presenting the first ever implementation of print-on-demand in the cultural heritage sector, Simal wonders: “Why keeping Print-on-Demand within the domain of the Museum stores and not integrating it with the entire visitor experience in the Museum?” (Simal, 2005). Since then, however, little has been done to blend the two. The Infinite Museum Store (IMS) is an attempt to achieve that, by weaving on-demand printing into the overall visitor experience. IMS is a novel mobile print-on-demand application for museums and galleries that employs several emerging technologies, such as progressive web applications,

image recognition and print-on-demand automation via Application Protocol Interfaces (APIs). Its aim is to enable the maximum number of museums and galleries, regardless of funding and resources, to generate revenue from their digitised collections, without the need for investing in kiosks (i.e. custom hardware and software). In our publication titled, “Reaping the Benefits of Digitisation: Pilot study exploring revenue generation from digitised collections through technological innovation” (Valeonti et al., 2018a), we examined the technical aspects and innovation features of IMS, sharing also the results of a pilot study held at the State Museum of Contemporary Art in Thessaloniki, Greece. The pilot demonstrated the potential for generating revenue from digitised collections through novel mobile solutions. Therefore, this paper examines IMS and mobile print-on-demand as a solution for museums to generate revenue in order to cover lost image licensing fees and promote OpenGLAM adoption.

IMS is comprised of a front-end and a back-end application, and it is built upon the infrastructure of the online art platform USEUM, utilising its database and servers. The front-end software of IMS is a progressive web application developed with Angular 4.0, which guides visitors through a series of controls that enable them to select an artwork through image recognition, choose a product, customise it and submit their delivery and payment details (Figure 4). The back-end software is a .NET application developed with C#, which is comprised of a series of web services, such as the artwork recognition algorithm, the payment validation and the order submission to the print-on-demand provider. The artwork recognition algorithm has been implemented so that it performs even in low-light conditions or with glares, whilst it can also recognise artworks with just a partial or skewed photograph of the work. The print-on-demand provider utilised in IMS is Printful, which was selected for the quality of its products.

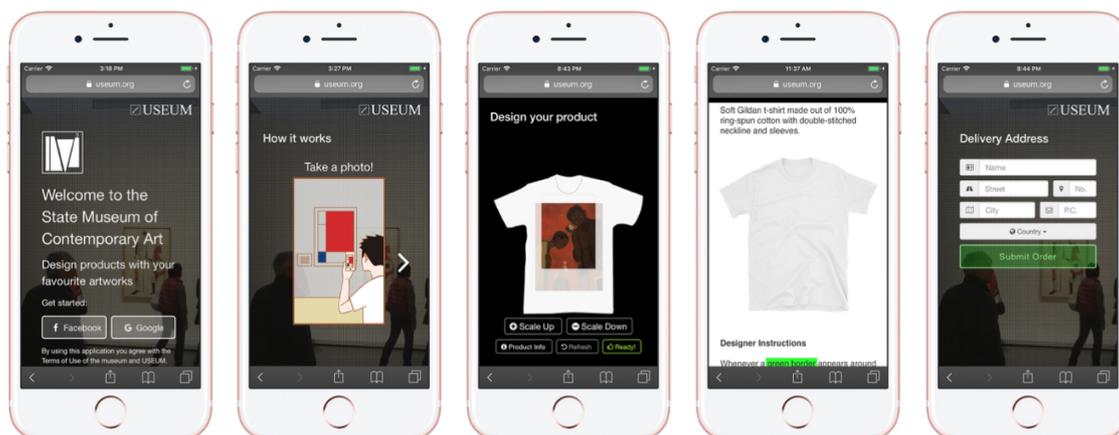


Figure 4: The front-end application of IMS

Apart from blending on-demand printing with the overall visitor experience, which Simal first described in 2005, it can be argued that one of the main advantages of IMS is that it enables all museums with digitised collections and especially smaller ones to reap the economic benefits of their digitisation. In order to achieve that, IMS replaces print-on-demand kiosks with visitors' smartphones, whilst the custom software that is running on them is replaced with a brandable (i.e. adjustable logo and colour palette) web interface that is shared across all different museums that use IMS. Utilising visitors' devices has several advantages, such as greater usability and faster data input, since people are already highly familiar with using their own smartphones. The commonly shared web interface, saves museums from paying for a bespoke front-end application and makes IMS accessible without any upfront payments (i.e. it is free for museums). For supporting IMS, a small commission on each sale could be charged in the future.

Service Design and the Visitor Journey

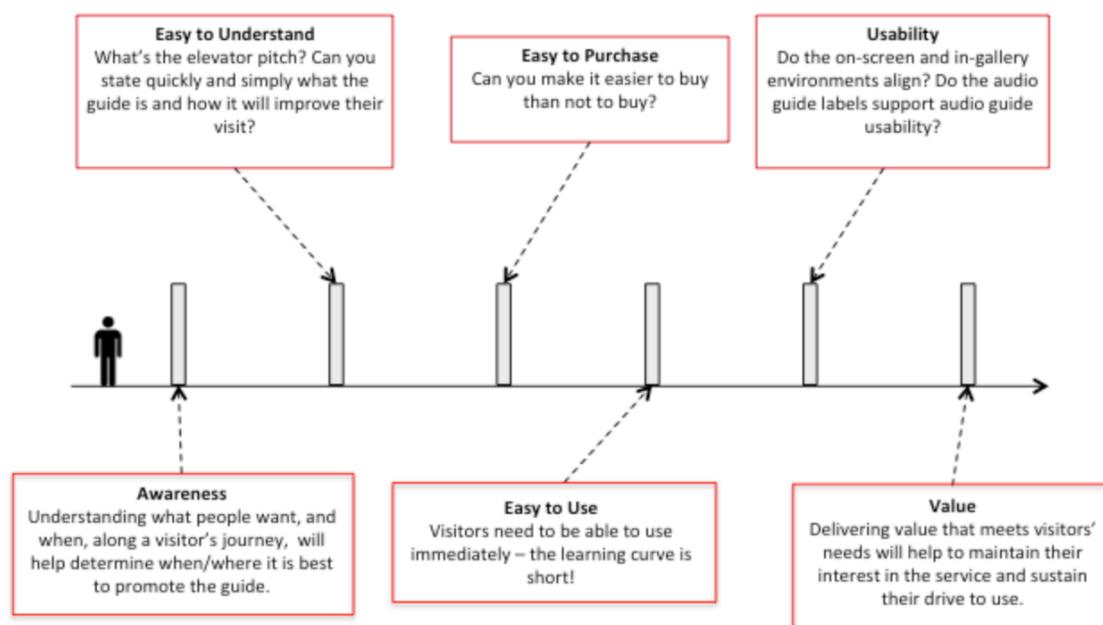


Figure 5: Barriers for using a service in the museum (Mann and Tung, 2013)

To maximise the chances for museum visitors to use IMS, the service design developed by Mann and Tung (2013) was followed. It was initially created for the Met's redesigned audio guide service. As explained in (Valeonti et al., 2018a) several measures were taken to address each barrier identified by Mann and Tung (Figure 5) individually. Overall, IMS during the pilot had a conversion rate of 2%, with regards to the visitors who registered to IMS, divided by those who submitted an order (Valeonti et al., 2018a). To get an estimate of potential profits with this conversion rate, a museum that makes ten dollars on each sale through IMS generates \$1,000 profit for every 5,000 visitors who use it. Engagement could also be considered high during the pilot (Valeonti et al., 2018a), given the novelty of the application and the fact it was a prototype version of the solution; the pick-up rate (i.e. the percentage of visitors who signed up on IMS) was 26%. More than half of the visitors who registered succeeded in identifying at least one artwork with image recognition and then 48% of those, selected a product and submitted a design (Valeonti et al., 2018a). Subsequently, the pilot demonstrated an arguably significant potential for such

solutions, taking also into consideration factors such as the novelty of the application, which featured uncommon controls (e.g. the product designer pictured on Figure 4), and the fact that the solution tested was a prototype version of IMS.

IMS is a highly tailored solution designed to facilitate between museums with digitised collections and the ever-increasing number of print-on-demand suppliers, aiming to open up the benefits of this service to all museums with digitised collections. However, it is worth noting that whereas in the past coding was necessary to develop a technical solution of any kind, it can be argued that now more than ever, there is an abundance of tools for non-technical users on the Internet. Therefore, for museums willing to invest time into investigating the tools available, there are ways for implementing print-on-demand solutions in-house. For example, Printful, which is the provider utilised by IMS, integrates directly and without any technical setup with Shopify, i.e. an e-commerce platform that is currently used by several museums (Ellis, 2017).

With the art merchandise market valued at 25 billion USD annually (FT, 2011) and a growing trend for customisable products (Schipperus, 2017), the potential of on-demand merchandise in museums is significant. The Birmingham Museum and Art Gallery reported that print-on-demand in its very first year of operation made 10% of image sales; the remaining 90% came from licensing images (Stephens, 2011). The V&A reported that in 2008 print-on-demand made approximately 6% of the revenues of V&A Images; artwork loans accounted for 15%, whilst the remaining 79% was credited to commercial and academic image licensing fees (Smith, 2009). However, the personnel expenses of V&A Images were between 85 and 90% of the division's total costs, and the museum's report highlighted that "high staff costs are due to the labour-intensive nature of supporting both commercial and academic audiences" (Smith, 2009, p.3), stating that "indeed, it is a challenge for the team to keep on top of the large numbers of requests that come in and to eliminate the backlog" (Smith, 2009, p.3). As Simon Tanner's seminal study first revealed (Tanner, 2004), it remains unclear whether image licensing operations are profitable at all. Therefore, putting more emphasis on the investigation of alternative ways

for monetising digitisation beyond image licensing, could not only allow more museums to join OpenGLAM, but it could also improve their profitability.

Conclusions

Although OpenGLAM has been gaining momentum, participation remains limited. Seeking to address one of the main barriers of OpenGLAM adoption, i.e. the loss of image licensing revenues, IMS was developed as an alternative way for monetising digitisation. IMS takes advantage of emerging technologies and on-demand printing automation via APIs. Print-on-demand for museums and galleries has long existed and in some institutions, it has made up to 10% of total image sales (Stephens, 2011). More importantly, it appears to require significantly less personnel in comparison to image licensing operations (Smith, 2009). IMS is a novel mobile print-on-demand solution that has been designed to enable all museums and galleries with digitised collections to take advantage of on-demand printing and enjoy the benefits this service provides, such as the ability to start generating sales and revenue without any upfront investment, as IMS is free for museums (Valeonti et al., 2018b).

The key characteristics of IMS are, firstly, that it utilises the visitors' smartphones to save museums from purchasing and maintaining custom kiosks, whilst providing a more user-friendly experience to visitors, and secondly, the ability to select from a range of different products and customise them, using the product designer tool (Figure 4). With an abundance of online tools for non-technical users on the Internet, it is argued that print-on-demand integrations can also be setup in-house, provided there is time and willingness from the museum staff to investigate such options. With image licensing being questioned for its profitability (Tanner, 2004; Grosvenor, 2018) and with museums finding it a "challenge . . . to keep on top of the large numbers of [image] requests" (Smith, 2011), it is deemed necessary to explore alternative ways for generating revenue, addressing also one of the main barriers for OpenGLAM adoption. In future work, we plan to develop an improved version of IMS, i.e. IMS 2.0, based on the feedback received during the initial pilot (Valeonti

et al., 2018a). We also plan to evaluate IMS 2.0 in a second pilot and conduct a study comparing it to existing kiosk-based print-on-demand solutions. The end goal of the pilot will be to reassess the potential of such solutions and to explore further how mobile print-on-demand could be utilised as an alternative source of revenue that could potentially replace image licensing in the long-term.

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