

Un-#VEiLing the Potential of Social Media: Open Archaeology for Public Engagement

Carla Ardis

MOLA (Museum of London
Archaeology). Northampton
carla.ardis@alumni.imtlucca.it

Riccardo Giovanelli

Ca' Foscari
University of Venice
riccardo.giovanelli@unive.it

Anna Bernardoni

Ca' Foscari
University of Venice
anna_ber@libero.it

Arianna Traviglia

Istituto Italiano di Tecnologia
- Center for Cultural Heritage
Technology
arianna.traviglia@iit.it

Abstract

Visualising Engineered Landscape (VEiL) is a landscape archaeology project based in Aquileia (Italy), which combines traditional methodologies with innovative digital technologies. Despite growing interest worldwide in Public Archaeology, in Italy *VEiL* is a unique example of an archaeological field survey project developing digital public engagement through Social Media (SM).

VEiL adopts a planned communication strategy, combining different SM (Twitter, Instagram, Facebook): multiple SM accounts enable customisation of contents according to the SM specific community, and to adapt communication patterns on the basis of audience response, matching public understanding and scientific authenticity. The adopted approach proved successful in reaching a broad and heterogeneous audience: the analytics show steadily increasing numbers of followers, ranging from academics to cultural associations, other public archaeology projects and general public.

Through digital engagement media, *VEiL* enables non-specialists to look behind the scenes of a research project. Posts that highlight diachronic landscape transformations are the ones with the highest interaction, suggesting a growing interest in local communities for local history: consequently, local landowners and residents feel more confident in sharing useful information with archaeologists. Direct, un-mediated interaction with *VEiL* project members increased followers also among scholars, attracted by the possibility of sharing reciprocal expertise in an informal fashion.

This paper describes the SM strategy, adopted by *VEiL*, of sharing the progress and results of ongoing research and how it fosters a direct connection between academics and public.

Keywords: Social media, Public Archaeology, public engagement, audience development, cultural heritage, field survey

Introduction

Social media (SM) is by now one of the most effective -if not the most effective- digital tools available in Public Archaeology, surpassing traditional websites and blogs in reaching out to both professional and general public audience interested in our past and in the research around it. With the world by now well into a social media revolution, it is no surprise that social media like Facebook, Twitter, Instagram

-to cite a few- are used extensively for communication in archaeology.

Social Media refers to the use of web-based and mobile technologies to turn communication into an interactive dialogue: the term indicates a variety of internet-based applications including social blogs, microblogging, Internet fora, weblogs, podcasts, photo sharing, services review, social bookmarking, and more. For the purpose of this study we will use SM to indicate mainly services like microblogs (e.g.



Twitter), social networking sites (e.g. Facebook) and photo sharing (Instagram). These have emerged as leading instruments in the communication of Antiquity research (Walker 2014b) for their capacity of reaching out to a diverse and transversal public and are the force driving the advancement of the Digital Public Archaeology discipline.

Public Archaeology and Social Media. An Overview

In the last 20 years, the passage from the static Web 1.0 to the interactive Web 2.0 (or social Web) has opened countless possibilities in the field of communication, public outreach and interaction according to a *many-to-many* communication scheme. The appearance and development of Social Media, more specifically, has made available low-budget, flexible, interactive platforms that, despite privately owned and controlled, could be nevertheless considered 'democratic' since they enable users to reach a diverse and global public through the creation of 'decentralised communication channels' (Amedie 2005).

The archaeological community has been able to quickly recognise the potential of SM in terms of public engagement and visibility, and in the course of the last decades - especially after 2010 - the majority of archaeological museums, parks, organisations, private companies, research projects etc. have embraced the use of SM for communication and data dissemination. Social Media have thus become the bridgehead of Digital Public Archaeology. Stemming from traditional Public Archaeology, this is now a discipline - and a practice - debating issues related to the use of 'New Media' (in particular Web, SM platforms, mobile technologies) for engaging public on themes related to archaeology, developing methods and tools for public outreach and investigating new channels of online communication (Richardson 2013; Rocks-Macqueen 2016).

The debate surrounding Digital Public Archaeology has more recently shifted to considering specific challenges, such as the need of developing strategies for fast dissemination of new discoveries with the goal of enhancing the impact of archaeological research, gaining public support and ensuring effective research outcomes' communications in return of public funding (Bonacchi 2012; Richardson 2013).

Influenced by post-processualism instances (Hodder 1999; Richardson 2013), the debate has focused also on novel means of interaction with a broad public through crowdsourcing (Bonacchi et al. 2015; Griffiths et al. 2015) and collaboratory/contributory digital practices able to create a new paradigm in the archaeological interpretation process (Bollwerk 2015; Bonacchi & Petersson 2017). Ethic issues (e.g. authority, privacy, inequalities in the access to the Internet, online abuse) related to Digital Public Archaeology have also been debated (Walker 2014a; Richardson 2018).

Nowadays, not only organisations and institutions with a 'physical' location and connected infrastructures - like museums and research centres-, but also 'virtual loci' - like archaeological projects and initiatives - make large use of SM, the majority of them showing a preference for micro-blogging applications (Twitter), visual storytelling tools (Instagram) and, most of all, platforms for social interaction (Facebook). The ways in which SM are exploited within archaeological projects and the level of awareness in topics related to Digital Public Archaeology is, on another hand, extremely diverse (Perry & Beale 2015). The absence of a clear SM strategy and the lack of a theoretical framework in which archaeological SM initiatives are developed affect often the use of SM within many projects, revealing an improvised (and often naive) approach to Digital Public Archaeology that disempower its potential.

While excavation or cataloguing projects are largely exploiting the power of digital applications for Public Archaeology (for example the projects Micropasts - Bonacchi et al. 2014-, *Portable Antiquities Scheme* - Bland 2009 -, *Open Salapia* - Baldassarre 2018 -, *The Vindolanda Trust* - Facebook2018a-, *MSU Campus Archaeology* - Brock & Goldstein 2015), landscape archaeology projects seem slower in grabbing the opportunities offered by SM to foster public engagement. Fieldwalking survey is certainly a methodology generally unknown to the broader audience, and, compared to traditional archaeological excavations, less visually impactful, if we consider that archaeological excavations' SM strategies are based on the publication of eye-catching images of unique monument discoveries, something that is unlikely in modern fieldwalking survey. However, field survey is also a discipline that enables many interactions with local inhabitants of a geographic area

(farmers, landowners, administration authorities, or simple amateurs) and is well placed to highlight the history of the local heritage and its preservation within local communities than a single site; moreover, this applies to a broader geographic space. Actively incorporating digital Public Archaeology initiatives in field survey projects has therefore the potential of creating strong bonds with local communities that can support and facilitate the project itself.

In the following paragraphs, we are going to describe the experience developed within the survey project *VEiL - Visualising Engineered Landscape* with the goal of presenting and discussing our Social Media Strategy and the results so far achieved. *VEiL* represents in Italy a unique example of an archaeological field survey project widely exploiting SM potential to reach and engage a general audience.

In general, the use of SM in field survey activities suffers from the lack of published literature. Given these circumstances, any detailed comparative analysis and discussion on the broader theoretical framework within which our activity is set would have been impossible or only based on partial data.

The present work can be therefore considered as an attempt to start a conversation on SM approaches adopted within archaeological fieldwork projects, with the aim of understanding whether appropriate SM strategies could contribute in raising interest around field survey activities and how SM can be used to increase the international visibility of an archaeological area, to provide insights on the work of field archaeologists and on material culture, and to educate the public on challenges faced by cultural landscapes.

The VPAI - VEiL Project Public Archaeology Initiative

VEiL is an H2020 funded landscape archaeology project focused on investigating anciently engineered landscapes around Roman Aquileia (Italy) (Traviglia 2018). In order to improve public accessibility to the outcomes of the project, *VEiL* started *V_PAI (VEiL Project Public Archaeology Initiative)*, a project's stream that encompasses a variety of activities, all addressed to exploit SM power to reach a broad and diverse audience, including both specialists and general public. *VEiL* represents a distinctive

instance within the above described framework of digital Public Archaeology in that it is applying SM public engagement strategies to a project that mainly entails field survey activities.

V_PAI is using a combination of multiple SM flanking a more traditional website: its SM space is defined by a Twitter account (Twitter 2018) since 28th October 2016, an Instagram profile (Instagram 2018) since 30th May 2017, a Facebook page (Facebook 2018b) since 17th October 2017, and a YouTube channel (YouTube 2018) since 16th May 2018.

Evolution of *V_PAI* strategy: the Interdependence with Public Responses

Since the beginning of our composite SM strategy, we needed to tackle some issues related to language and communication style. *VEiL* is an Italy based project but, having been initially funded by the European Community, had to reach an international audience. This circumstance, together with later confirmations from analytics (see 4.1), suggested for the use of English language, which, however, would have excluded wide portions of the Italian public, unfamiliar with it. The choice was to use both languages based on the particular SM's own characteristics. On Facebook, the same content is posted in both languages (Italian and English): Facebook is not bounded by characters limitation and it allows to select a preferred language for each post, offering the possibility to translate the contents; users can thus select whether to read the text in Italian or in English. The preferred language in which the post appears is the one selected by each user and/or it depends from the location of its IP address. On Twitter, due to characters limitations, posts are published only in English. On Instagram, text is extremely short, and communication is conveyed mainly by images and hashtags, reflecting the visual nature of this social platform.

The second challenge was the definition of a content strategy that had to reflect the main goal of *V_PAI* of reaching out for both general audience and archaeological community. Our posts aim to find a balance between public understanding and scientific authenticity: on one side, content must be appealing to the general public and understandable, without technicalities; on the other, posts must have an interest also for the scientific audience. Therefore, the approach adopted is to privilege scientific content

and to convey it in a non-specialist, but still accurate language. Specialised language is not avoided, but technical details are always explained; objects and habits of the ancient world are frequently compared with contemporary tools and customs, in order to enable even non-specialised users to perceive them as something familiar. SM content is also determined by the ‘intrinsic nature’ of each platform, and the functionalities offered by it: Facebook allows to share detailed back-stories and long posts; Twitter, due to its “microblog” nature (Akcora & Demirbas 2010, Richardson 2012), enables to ‘tweet’ short status updates to a web-based public timeline; Instagram uses visually attractive content, with images being “a communicative act as a part of the whole social networking experience” (Akkanat 2012), and networking hashtags.

VEiL's SM strategy has changed through time: our communication patterns have become increasingly more structured, adapting to audience's responses. For the purpose of this papers, we have subdivided chronologically the trajectory of our SM strategy in 7 phases, reflecting the changes in our communication patterns. This temporal subdivision was deemed necessary in order to compare the results reached during each phase and to connect the variation in followers number and in public interaction to the strategic choices made in each phase.¹ The 5th phase, corresponding to the period when we switched to a more structured strategy, is subdivided in 9 sub-phases - reflecting the taking place of special events - in order to analyse both the characteristics of each event and their effects on the public engagement growth.

Phase 1: Opening. During this phase, in which only the Twitter account was active, we used our account in an experimental way, without following any structured strategy. Very few tweets were published during the first months. Content was rarely original: the account frequently shared news and tweets created by other Twitter users relevant to the project's purposes and interests, with the aim of creating a network including other archaeological research projects. During this period we aimed to build a fol-

lows consensus, mainly following other colleagues and archaeology-related accounts.

Phase 2: Fieldwork diary. For two weeks, between May and June 2017, the first *VEiL* fieldwork campaign since the launch of our SM took place: this occurrence provided the occasion to improve our SM communication on multiple levels: the Instagram account was opened and ad hoc content was daily posted on both platforms to share archaeologists' activities in the field. This new approach started to draw attention on *VEiL* accounts: other projects and institutions showed interests on what we were doing and dedicated some space to our research on their accounts.

Phase 3: Team management. Immediately after fieldwork, *VEiL* SM presence remained for a while scarcely planned. Twitter and Instagram accounts were managed simultaneously by different team members with no coordination, and posts essentially described moments of their archaeological activities within the project and other themes related to *VEiL*'s interests. The main goal during this period was to ensure public loyalty and to avoid a drop in the number of followers

Phase 4: Pre-fieldwork and fieldwork. A turning point in the development of *VEiL* SM strategy was the fieldwork season in November 2017, when, looking at the analytics referring to the previous period, we realised the need of a more structured communication and we started defining and implementing our strategy. We thus increased our SM presence by opening a Facebook page; secondly, two weeks before the survey campaign, we started posting every day content related to the designing and planning of a landscape archaeology project, from the analysis of remote sensing images, through the study of recovered artefacts, to the dissemination of the research results.

During fieldwork activities, we published daily multiple posts, but according to a more structured and planned strategy; with growing awareness of each platform mechanism, we started also to systematically collect information and to study public reactions to each post, in order to identify the themes preferred on each SM and/or by different public and to recognise the most engaging content.

Phase 5: Weekly schedule structured strategy. Further analytics inspection lead to acknowledge that posting all the year round (and not only during

¹ Due to the offset in the accounts opening, only Twitter has 7 phases, while Instagram and Facebook has respectively 6 and 4.

fieldwork) was crucial to increase audience and to gain its loyalty. We thus started to design a well defined strategy, adapting the content to the social platform to be used. A specific role -both in the strategy conception and implementation- was assigned to each team member, in order to exploit each members' expertise and inclinations. Collected analytic data provided information for the identification of content that had generated an higher number of visualisations: during this period (about 7 months), *VEiL* social accounts started to post contents according to a regular weekly schedule, organised as three fixed appointments, each one devoted to a specific topic:

- **#MondayHistory**: dedicated to the history of the Roman city of Aquileia;
- **#WednesdayMethodology**: facing issues related to the methodology of archaeological research and enabling the public to see archaeologists at work;
- **#FridayFind** presenting each week an unusual find recovered during project fieldwork.

This weekly schedule was completed by other, more occasional, posts related to special occurrences, news or happenings; the routine was also occasionally disrupted during the participation to specific events (like conferences) by *VEiL* members: in this case the accounts published posts multiple times a day, sharing real time what was happening at the event. The hashtag **#VEiLinTransfer** was purposely created in order to gather all the content related to these events. To elucidate the impact that some of these activities determined on Twitter's followers growth, the phase 5 will be further divided in sub-phases. The planned weekly schedule (phase 5.1) was maintained over 2+ month in order to enable the public to get used to the new strategy and create strong public engagement. After this period, the scheduled posting plan was altered in connection with specific events. The first, in February 2018 (5.2), was a 4 days Public Archaeology Conference in Italy, TourismA 2018, described on *VEiL*'s SMs with the dedicated hashtag #passatofuturoTourismA18. Later, *VEiL* members participated to the "Computer Application and Quantitative

Methods in Archaeology" conference held in Tubingen in March 2018, joining an international network through the hashtag #caatue (5.4). The third event that drew attention on *VEiL*'s SM was an only-twitter event, called #MuseumWeek, that took place at the end of April 2018, during which *VEiL*'s SMs used the official hashtag of the event to build links with other Italian institutions (5.6). The last event was the international conference YoCoCu 2018, held in Matera in May, that was used to forge connections with professionals through the twitter network @yococu (5.8). Between each event, *VEiL*'s SMs reverted back to the usual routine (5.3, 5.5, 5.7), maintaining growing followers acquisition rates as a backlash of the events, especially on Twitter.

Phase 6: Artefact study campaign. The next turning point in the development of *VEiL* SM strategy was the artefact study campaign that took place in Summer 2018. In that period, the regular weekly schedule was put on hold and SM accounts posted content daily, sharing in real time the research activities. Three posts were scheduled every day and their content included information on *VEiL* members, the study routine and the material culture being analysed. The growth in the number of followers reached in this short period demonstrated again how the 'real-time archaeological work' contents can increase engagement rates and the effectiveness of conveying unique content, both in boosting interest and in reaching new public.

Phase 7: new weekly structured strategy (current). A new strategy started to be implemented after the artefact study campaign and it was again organised following weekly fixed appointment, continuing up to now. The current weekly schedule is organised as such:

- **#VEiLers**: published on Tuesday, these posts present team members at work, detailing project methodology and introducing the real actors of this project. Replacing **#WednesdayMethodology**, these posts portray team member busy in different fieldwork tasks showing work routine;
- on Wednesday, with the header "in the meantime, in **#Aquileia**", *VEiL* social accounts circulate content related to archaeological projects or other initiatives that took place

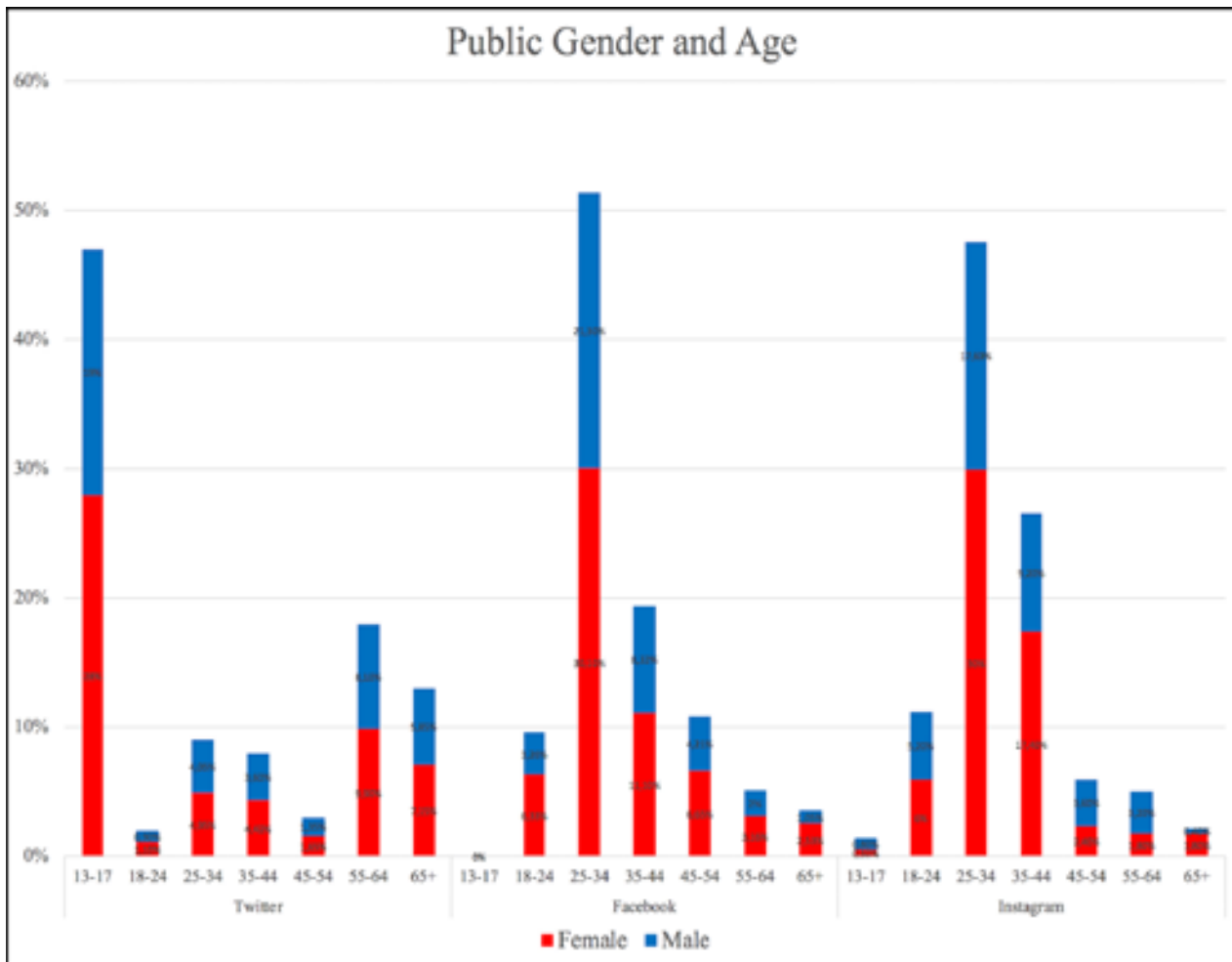


Figure 1. VEiL project's public gender and age.

in Aquileia: this kind of posts are intended to foster the creation of a network with local institutions and to promote an informal interaction among different stakeholders working in the same area;

- we maintained **#FridayFinds** in the new schedule, as analytics demonstrated that is the most effective and engaging content for public over the whole period of life of VEiL SM accounts. In order to increase public engagement and to foster public interaction, posts occasionally contain a direct call to action: through riddles or direct questions, followers are called to recognised the object portrayed in the posts. We also use **#FridayFinds** posts to gain suggestions from expert public in relation to artefacts, the nature of which is dubious: this weekly post is highly appreciated by material culture scholars, attracted by the

possibility to share preliminary results without the waiting time of official publications and comparing finds from different sites in an informal way;

- during the weekend, **#DiscoveringAquileia** presents each week an archaeological area of the city with the goal of improving public knowledge of the city where the project takes place. The topic was chosen specifically for the summer period, when tourism in Aquileia is at its peak: these posts are addressed mainly to this segment of public, providing useful information for the visit to the city.

The new strategy is enriched by a new graphic design for the visual content, with a coloured label assigned to each image according to each theme (orange for **#VEiLers**, light-blue for **#FridayFinds**,



Figure 2. VEiL project’s Twitter followers interests.

green for #DiscoveringAquileia) to easily recognise the topic of each post.

Results so far reached are going to be discussed in detail below.

Insights and Analytics

Analytics have been constantly monitored using tools provided by each SM platform to better understand the interests of the public and the volume of engagement each post and each strategy change have determined. Analytical data collection was made both automatically and manually in order to perform comparative analysis between the results. Key metrics selected for the study of our SM strategy and for understanding our public’s inclinations are multiple: qualitative and quantitative metrics about gender, age and nationality, coupled with more subtle information provided by Twitter Analytics regarding the interests of the followers, were fundamental to understand the potential and the geographical coverage of each platform. Quantitative metrics related to the traffic volume provided by each account (i.e. visualisations, interactions, impressions, likes, clicks,

retweets, sharing, comments, answers and followers growth) have been collected on a daily/post basis and turned into mean rates to compare strategies across time.

As analytics and insights are accessible only by the owners and managers of the SM profile and given the absence of published data relative to other similar projects, it is not possible to compare VEiL’s quantitative and qualitative parameters with other projects’ ones. In absence of accessible structured data, analysing merely public parameters of other projects could have led to an incorrect interpretation. Followers’ number could not be considered a way to measure a page/profile effectiveness in reaching the public, since all the SM platforms provide paid services to sponsor the page, to improve the visibility of the account themselves, and even to purchase followers. It must be noted that, throughout all the phases presented above, VEiL Social media did not make any use of sponsored content. Furthermore, analysing publicly visible interactions is not enough, because real interactions should take into account also the number of users who actually see the content, an information that Social Network platforms share only with the account owner(s). For this rea-

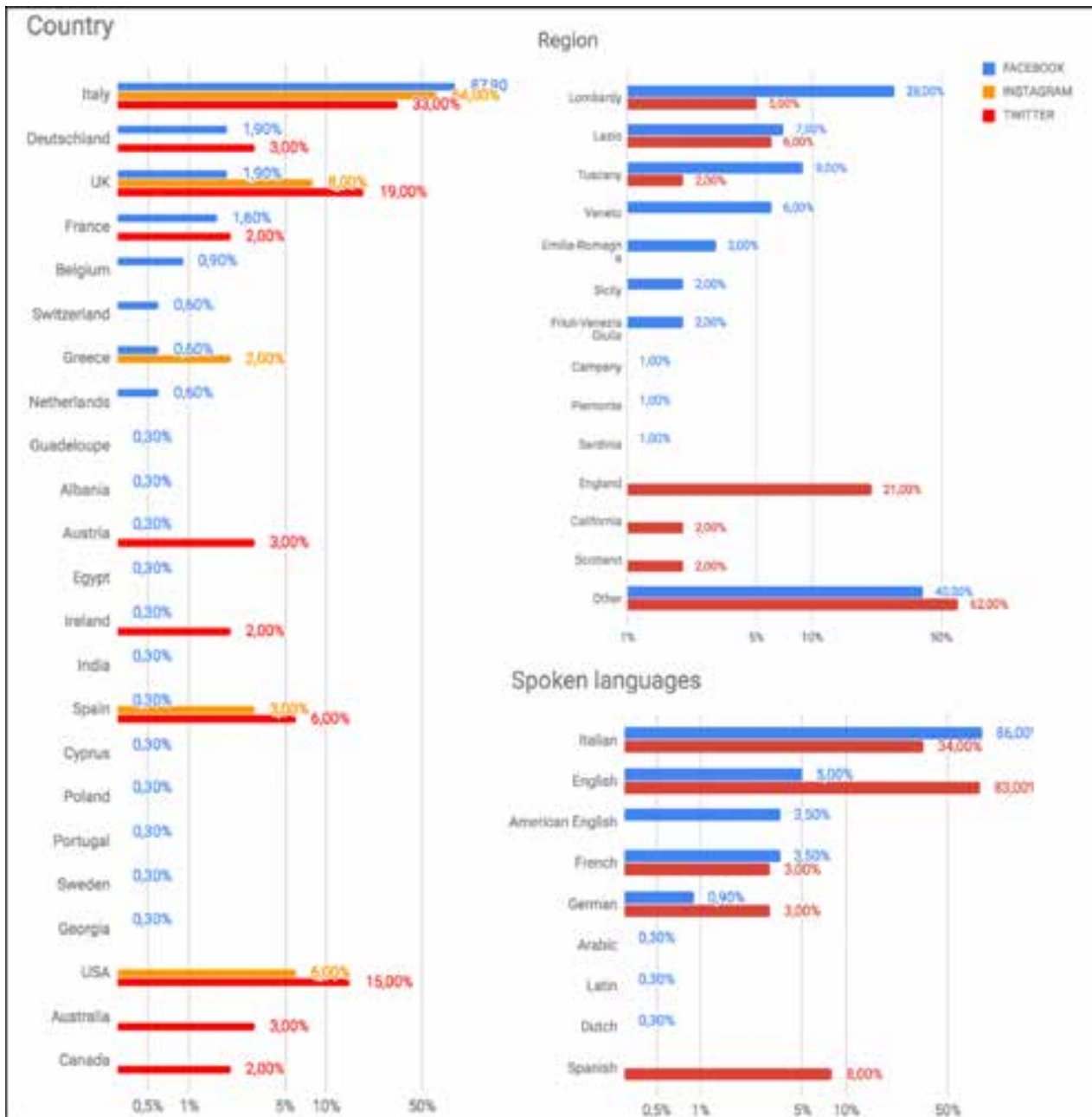


Figure 2. VEiL project's Twitter followers interests.

son, our analysis focuses only on VEiL's results and achievements, with the hope that in the future other projects will start sharing their analytical data, providing means for a more detailed and comprehensive comparative analysis.

Public quantitative and qualitative metrics

The nature of each of the used SM platforms is reflected in the different type of followers. As data collected show, VEiL project's public is quite heterogeneous across the three used platforms; almost

all ages and both genders are represented, with a slight predominance of female users (always around 60%). Nonetheless, there is a significant difference between Twitter public, on one side, and Facebook and Instagram public² on the other. Instagram and Facebook publics appear similar in terms of age, with around 50% of the followers in the 25-34 y.o. range and a noticeable presence

² Data shown for Twitter Public are from the public until March 2018, for Instagram and Facebook until July 2018. Privacy rules set on Twitter after that date make impossible to observe the gender of the followers.

	Starting	Days	Posts			Visualisations/Impressions			Interactions/aves			Link/profile clicks			Sharing		Likes			Answers/comments			New followers			
			Twitter	Facebook	Instagram	Twitter	Facebook	Instagram	Twitter	Facebook	Instagram	Twitter	Facebook	Instagram	Twitter	Facebook	Twitter	Facebook	Instagram	Twitter	Facebook	Instagram	Twitter	Facebook	Instagram	
Phase 1	28/10/2016	213	10			636			213			3			1		3				0			6		
Phase 2	29/05/2017	13	30		54	5597			201		2	2			4		57		602	3		6	30		46	
Phase 3	13/06/2017	110	41		14	26001			576		0	24			44		124		223	4		0	27		1	
Phase 4	01/10/2017	61	58	57	26	63739	30226	2660	1411	1719	0	117	6	7	203	90	444	704	527	13	44	12	89	222	63	
Subphase 5.1	01/12/2017	75	31	31	13	106606	22253	1777	2088	944	1	196	0	5	256	64	713	471	202	36	20	11	107	16	8	
5.2 <i>Toursima 2018</i>	14/02/2018	4	11	4	1	7180	2616	171	240	100	0	8	1	2	22	6	77	50	18	2	1	0	20	0	0	
Subphase 5.3	19/02/2018	26	15	14	8	45486	6299	1046	988	296	0	82	0	7	112	19	270	148	165	4	5	3	22	6	15	
5.4 <i>CAA 2018</i>	17/03/2018	9	31	6	1	16184	2282	124	453	116	0	23	0	1	18	6	98	63	8	4	0	0	22	4	2	
Subphase 5.5	26/03/2018	28	16	15	6	40447	6501	612	789	327	0	44	0	6	78	15	230	131	48	7	7	0	22	10	7	
5.6 <i>MuseumWeek</i>	23/04/2018	8	31	4	14	81551	729	1498	1137	49	0	49	0	4	534	2	1053	24	134	83	1	0	22	1	0	
Subphase 5.7	01/05/2018	19	14	12	9	58597	6997	1607	1041	302	1	42	0	13	182	6	403	102	147	21	4	2	19	2	13	
5.8 <i>YOCCCI 2018</i>	20/05/2018	8	16	8	2	16626	2271	248	367	139	0	14	0	0	67	5	137	83	27	9	3	0	19	34	0	
Subphase 5.9	28/05/2018	33	16	16	9	64043	3248	1660	1289	228	0	40	0	11	149	3	379	86	144	49	0	3	25	5	14	
Phase 6	30/06/2018	11	25	28	12	61684	9170	2334	1857	682	3	108	1	27	135	14	403	318	226	13	21	9	50	10	36	
Phase 7	11/07/2018	27	19	21	3	72642	4574	595	1172	254	0	101	0	9	201	3	513	109	68	15	3	0	46	5	10	
TOTAL		647	164	216	172	666850	117166	14332	13824	5156	7	853	8	92	2006	233	4902	2290	2549	257	109	46	526	314	207	

Table I: VEiL project’s Twitter, Facebook and Instagram resulting metrics, subdivided by each phase and sub-phase of the strategy.

for the age ranges 18-24 and 35-54, which reflects the fact that these platforms are used by a younger audience. Twitter public is quite different, with age range between 55-64 years and 65+ well represented, as well as an unusual presence (47%) of followers aged 13-17. This can be explained as a misrepresentation of data, linked to the fact that institutional accounts often declare as date of birth the date of institution founding (or project starting for projects) or leave it blank, letting Twitter automatically registers an age range from 13 to 55. Even excluding this range from the analysis, we can see that the Twitter public is older than the Instagram and Facebook ones, and requires therefore a customised communication.

Followers’ interest analytics provided by Twitter (see figure 2) seem to show that our Twitter followers are part of an educated and knowledgeable public, which likely utilise it as a “news media” (Bennato, Benhotman & Pancones 2011; Java, Song, Finin et al 2007) rather than a “phatic media” (Miller 2008). The strong presence among our followers of archaeological institutions, museums, projects and professionals confirms this view.

Like Twitter, Instagram works well to create networks for information exchange among institutions and associations. This possibility is instead discounted on Facebook, since this platform does not allow direct interactions between pages, making it more difficult to foster networking among projects or organisations. Our Facebook followers are thus mainly

private profiles. Unfortunately, more in-depth information about Facebook and Instagram public’s interests are not available due to the different privacy rules of these platforms’ analytics.

Public nationality and spoken language are other key metrics, that initially enabled us to determine the style and the preferred language on each SM. There are slight differences across our three SM platforms. Italy is the predominant country of the public across all the platforms (Figure 3). On Facebook Italy is the only country significantly represented, while on Twitter there is a strong presence of a UK based public and a slight presence of Americans and Spanish; for Instagram we record a good presence of UK and USA followers. It’s interesting to point out here that up to the **#MuseumWeek** (5.6), Twitter used to have an absolute predominance of UK followers, that now represent only the 19% of the followers. This can be explained with the high number of interactions with Italian institutions and personal profiles during that event, which resulted in a fast growth of Italian based public on this specific SM.

Twitter and Facebook insights provide also information about the regions of origin, although in an incomplete way. figure 3 shows the geographic spread of our public: on Facebook, the Italian administrative regions with highest numbers of followers are those in which VEiL’s members live and work, reflecting the role of personal connections. On Twitter, we see a different behaviour, with less depen-

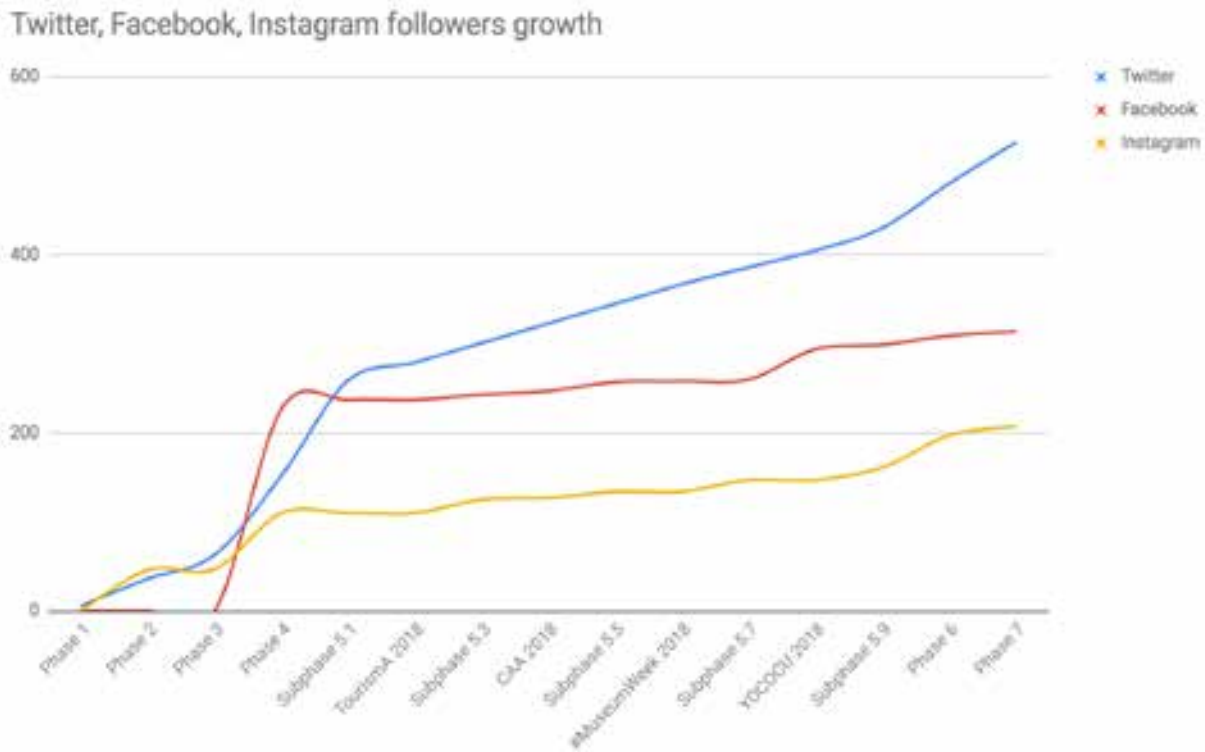


Figure 4. National, regional and linguistic origin of the public of *VEiL* project's SM platforms.

dency from the members personal connections and a wider reach.

Spoken languages plot of Facebook shows an almost absolute prevalence of Italian language followers; on Twitter, instead, we can appreciate a predominance of English speakers: this information was at the basis of the decision to write tweets in English.

As stated above, Facebook remains connected to the local communities and reaches less effectively an international and wider public, thus pointing out the higher potential of Twitter.

Engagement Quantitative Metrics

Metrics like numbers of consumptions (Heinonen 2011), interactions, and followers' gains have been collected on a daily basis since the beginning of the project. Data were then subdivided by each of the phases presented above, and interactions were calculated per each subphase. The resulting values are synthesized in table I. Phases and sub-phases had different lengths, ranging from 4 days to 213 days. Raw data like these provide a way to compare information relative to the same phase on three SM

platforms and to evaluate the relationships between different key metrics. For example, the metrics of subphase 5.4 and subphase 5.6, which share a similar time span and the same number of tweets on Twitter, demonstrates that the number of answers -meaning the constant interaction with other users under each original post- is correlated to the overall engagement of followers with the posted content more than to the number of tweets.

Analytics also enable comparison and evaluation of the followers growth over time, as shown in figure 4: Instagram proved to be less successful in attracting followers while Twitter started to grow faster since the beginning of the PA initiative and never lost its positive trend. This, with the comparative observation of the values collected in table I, suggests that type of content shared by VPAI is more suitable for a microblogging platform and, in general, more attractive for Twitter users: the total number of visualisations so far obtained on Twitter overcome by almost the 600% those on Facebook and by almost the 6000% the ones on Instagram, which, instead, continues to grow at a slow pace.

	Period	Days	Tweets	Visualisations	Interactions	Clicks	Retweets	Likes	Answers	New Followers
Phase 1	28/10/2016	213	10	3,0	1,0	0,0	0,0	0,0	0,0	0,0
Phase 2	29/05/2017	15	30	373,1	13,7	0,1	0,3	3,8	0,2	2,0
Phase 3	13/06/2017	110	41	236,4	5,2	0,2	0,4	1,1	0,04	0,2
Phase 4	01/10/2017	61	58	1045,4	23,1	1,9	3,3	7,3	0,2	1,5
Subphase 5.1	01/12/2017	75	31	1421,4	27,8	2,6	3,4	9,5	0,4	1,4
Subphase 5.2 - TourismA event	14/02/2018	4	11	1795,0	60,0	2,0	5,5	19,3	0,5	5,0
Subphase 5.3	19/02/2018	26	15	1749,5	38,0	3,2	4,3	10,4	0,2	0,8
Subphase 5.4 - CAA 2018	17/03/2018	9	31	1798,2	50,3	2,6	2,0	10,9	0,4	2,4
Subphase 5.5	26/03/2018	28	16	1444,5	28,2	1,6	2,8	8,2	0,3	0,8
Subphase 5.6 - MuseumWeek	23/04/2018	8	31	10193,9	142,1	6,1	66,8	131,4	10,4	2,8
Subphase 5.7	01/05/2018	19	14	3084,1	54,8	2,2	9,6	21,2	1,1	1,0
Subphase 5.8 - YOCOCU 2018	20/05/2018	8	16	2078,3	45,9	1,8	8,4	17,1	1,1	2,4
Subphase 5.9	28/05/2018	33	16	1940,7	39,1	1,2	4,5	11,5	1,5	0,8
Phase 6	30/06/2018	11	25	5607,6	168,8	9,8	12,3	36,6	1,2	4,5
Phase 7	11/07/2018	27	19	2683,0	43,4	3,7	7,4	19,0	0,6	1,7

Table II: VEiL project’s Twitter resulting daily mean values.

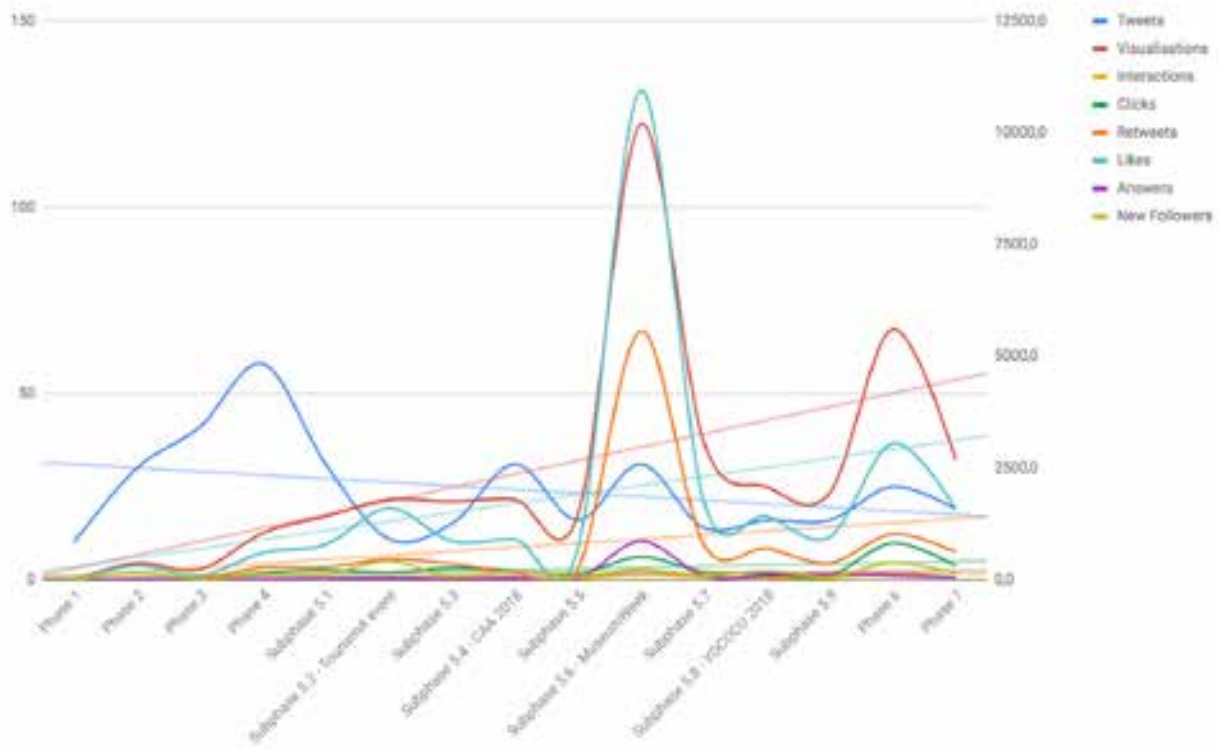


Figure 5. VEiL project’s Twitter daily mean values plot with tendencies lines.

For further and more consistent analysis, the arithmetic mean of each value has been calculated on the basis of the length of each phase, in order to understand what influences the growth or decrease of the public engagement. The resulting daily values have been synthesised in tables II, III and IV and graphically rendered in figures 5, 6 and 7.

Twitter Analysis

Table II shows Twitter key metrics resulted from the means calculation over each phase. The first possible deduction is that Twitter saw a fast growth in phase 4, showing the interest of public for fieldwork activities undertaken in that peri-

	Period	Days	Tweets	Visualisations	Interactions	Clicks	Retweets	Likes	Answers	New Followers
Phase 1	28/10/2016	213	10	3,0	1,0	0,0	0,0	0,0	0,0	0,0
Phase 2	29/05/2017	15	30	373,1	13,7	0,1	0,3	3,8	0,2	2,0
Phase 3	13/06/2017	110	41	236,4	5,2	0,2	0,4	1,1	0,04	0,2
Phase 4	01/10/2017	61	58	1045,4	23,1	1,9	3,3	7,3	0,2	1,5
Subphase 5.1	01/12/2017	75	31	1421,4	27,8	2,6	3,4	9,5	0,4	1,4
Subphase 5.2 - TourismA event	14/02/2018	4	11	1795,0	60,0	2,0	5,5	19,3	0,5	5,0
Subphase 5.3	19/02/2018	26	15	1749,5	38,0	3,2	4,3	10,4	0,2	0,8
Subphase 5.4 - CAA 2018	17/03/2018	9	31	1798,2	50,3	2,6	2,0	10,9	0,4	2,4
Subphase 5.5	26/03/2018	28	16	1444,5	28,2	1,6	2,8	8,2	0,3	0,8
Subphase 5.6 - MuseumWeek	23/04/2018	8	31	10193,9	142,1	6,1	66,8	131,4	10,4	2,8
Subphase 5.7	01/05/2018	19	14	3084,1	54,8	2,2	9,6	21,2	1,1	1,0
Subphase 5.8 - YOCOCU 2018	20/05/2018	8	16	2078,3	45,9	1,8	8,4	17,1	1,1	2,4
Subphase 5.9	28/05/2018	33	16	1940,7	39,1	1,2	4,5	11,5	1,5	0,8
Phase 6	30/06/2018	11	25	5607,6	168,8	9,8	12,3	36,6	1,2	4,5
Phase 7	11/07/2018	27	19	2683,0	43,4	3,7	7,4	19,0	0,6	1,7

Table III: VEiL project’s Facebook resulting daily mean values.

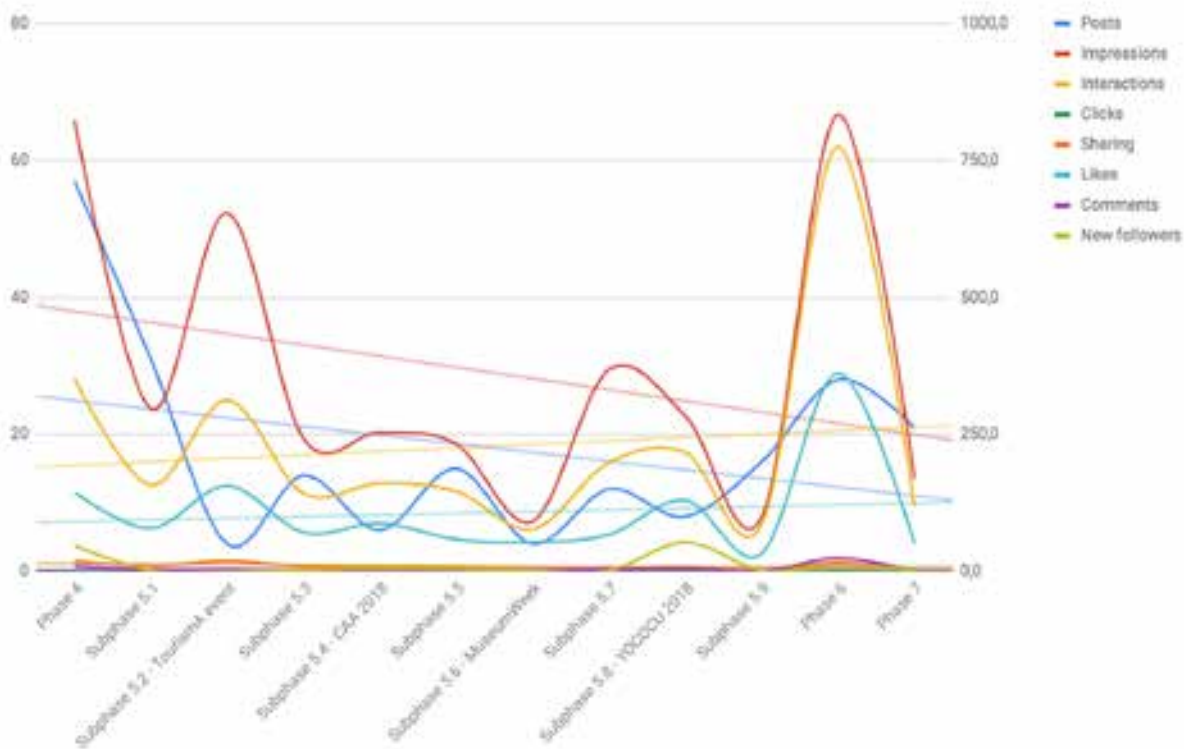


Figure 6. VEiL project’s Facebook daily mean values plot with tendencies lines.

od. From this moment, the growth of the account seems constant in all the metrics observed, with some standard error and one exception, clearly seen in subphase 5.6 during the #MuseumWeek. This event reached exceptional results, gaining almost six times more visualisations, interactions and clicks compared to the previous phases and

subphases, and almost twenty times more retweets and likes: the account never saw a similar engagement rate before and never experienced similar long lasting effects; indeed, the three subphases after the #MuseumWeek registered a decreasing trend, but compared to the results collected during the phases before that event, they saw numbers

	Period	Days	Posts	Impressions	Saves	Profile views	Likes	Comments	New followers
Phase 1									
Phase 2	29/05/2017	15	54		0,1		40,1	0,4	3,1
Phase 3	13/06/2017	110	14		0,0		2,0	0,0	0,0
Phase 4	01/10/2017	61	26	43,6	0,0	0,1	8,8	0,2	1,0
Subphase 5.1	01/12/2017	75	13	23,7	0,0	0,1	2,7	0,1	0,0
Subphase 5.2 - TourismA event	14/02/2018	4	1	42,8	0,0	0,5	4,5	0,0	0,0
Subphase 5.3	19/02/2018	26	8	40,2	0,0	0,3	6,3	0,1	0,6
Subphase 5.4 - CAA 2018	17/03/2018	9	1	13,8	0,0	0,1	0,9	0,0	0,2
Subphase 5.5	26/03/2018	28	6	21,9	0,0	0,2	1,7	0,0	0,3
Subphase 5.6 - MuseumWeek	23/04/2018	8	14	187,3	0,0	0,5	16,8	0,0	0,0
Subphase 5.7	01/05/2018	19	9	84,6	0,1	0,7	7,7	0,1	0,7
Subphase 5.8 - YOCOCU 2018	20/05/2018	8	2	31,0	0,0	0,0	3,4	0,0	0,0
Subphase 5.9	28/05/2018	33	9	50,3	0,0	0,3	4,4	0,1	0,4
Phase 6	30/06/2018	11	12	212,2	0,3	2,5	20,5	0,8	3,3
Phase 7	11/07/2018	27	3	22,0	0,0	0,3	2,5	0,0	0,4

Table IV: VEiL project’s Instagram resulting daily mean values.

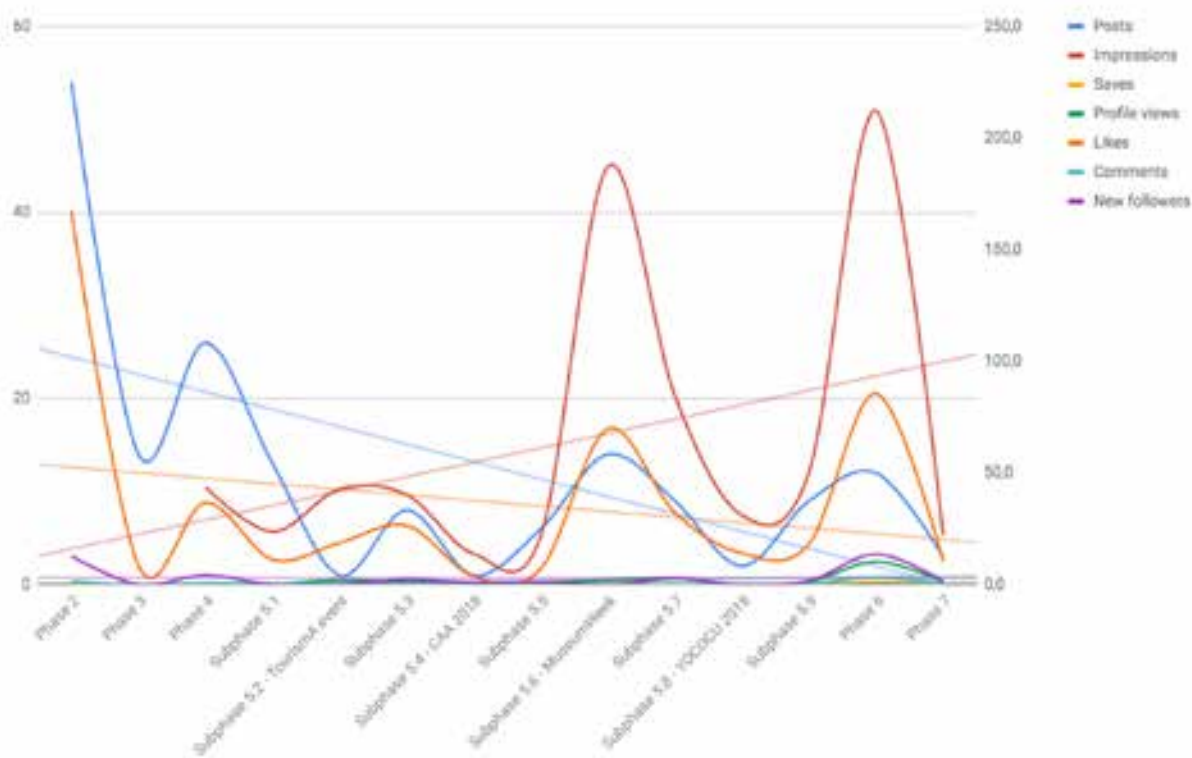


Figure 7. VEiL project’s Instagram daily mean values plot with tendencies lines.

still significantly higher and rate never fell under the previous values.

Table II shows another characteristic common of all the four events, i.e. the attainment of a higher number of new followers as a consequence of an ‘event’ compared to any other phase, with the excep-

tion of the recent phase 6. This fact confirms once again the importance of the networking on Twitter on occasion of special events of reciprocal interest in order to create a core group of long lasting and interacting followers.

Phase 6 represents another turning point: here,

after the immovability seen in Subphase 5.9, analytics show a new fast growth, due to the artefact study campaign: the new strategy adopted after that event together with the long-lasting effects of the previous fieldwork, is showing engagement rates comparable only with the subphase 5.7. Tendencies lines presented in figure 5 are indeed positive and show a growing trend for all the engagement key metrics selected, demonstrating the efficacy of the strategies adopted so far.

Facebook Analysis

Table III collects Facebook key metrics resulted from the means calculation over each phase. The account opened during the first fieldwork activities. A comparison with Twitter's metrics shows that during this phase Facebook appears to have gained better results, followed by a steadfast decline during the next phase. This may be explained by the nature of the 'core public' in this platform: this is built mainly from personal "contacts" of *VEiL* team members, people not necessarily interested in the archaeological discourse, explaining the key metrics volatility over time.

Analysis of the subphases related to events shows how this platform performed differently compared to Twitter: **#MuseumWeek**, being a virtual event, did not concur to stir interest and obtain new followers, while the conferences **TourismA 2018** and **YoCoCu2018** determined peaks in new followers rate.

Phase 6 represents also here a defining moment: the real-time description of the work routine of *VEiL*'s team and insights on their research profiles determined an increase of impressions, interactions, likes and comments, never seen so frequent before. Tendencies lines (figure 6) show that while impressions have a negative tendency, likes and interactions rate, together with followers (figure 4) are still growing. The new strategy, more focused on team members' daily work, has a good chance to boost the followers of *VEiL*'s Facebook page.

Instagram Analysis

Instagram key metrics mean rates have been collected in table IV. It was not possible to collect data from impressions, profile views and comments prior the Facebook page opening due to internal limitations.

Due to the fact that there is not an internal tool for metrics extraction in Instagram, data have been collected manually from each post: for this reason, it is necessary to keep in mind that Instagram data here analysed represents posts engagement and not the whole profile or page engagement as seen for Facebook and Twitter. However, due to the nature of this specific SM, single-post oriented, it can be assumed that there wouldn't be significant differences.

Of the SM adopted within *V_PAI* Instagram appears indeed to be providing the worst results. Both raw data in table I and mean rates in table IV portray a remarkably lower public engagement than Twitter and Facebook. This can be explained by the nature of this SM based on visually attractive posts without textual content. Indeed, fieldwork activities, with their highly appealing visual content, enabled to attain followers' rates superior to 1.0, while during the structured strategy period of Phase 5 they have been equal to 0. Likes and impressions rates demonstrate the same behaviour, except for the **#MuseumWeek** sub-phase (5.6), which gained slightly better results. Tendencies lines displayed in figure 4 are the less promising among the three SM, but the impressions rates plot is now showing a positive trend; interactions with other projects together with a more targeted use of combined broad and specific hashtags and the adoption of the new strategy will likely provide positive results in a short time frame.

Conclusion

Experience has demonstrated how managing effectively our SM for communicating research requires vision, accurate planning, and systematicity, and even developing digital communication skills that, as archaeology practitioners, we initially had to cultivate through self-training before being able to master. SM offer us analytic tools that provide direction and support our efforts of expanding the number of people we are communicating with: the analyses that we now methodically undertake on SM mined data enable us to understand better both our work and our public's requests and provide insights that can help us to shape new strategies to increase our audience. In just one year the three SM platforms of our project went from 82 to 1,047 total

followers, from 209 to 2,542 total interactions per month and from just 8,000 to 123,169 total consumptions per month, reaching in the whole SM lifetime - for a total of 752 posts - 32,541 total interactions and the remarkable number of 798,000+ total consumptions.

The positive trends in the growth of our audience that we are witnessing through evaluation of the SM metrics demonstrate how a correct SM strategy can create the conditions for gaining the interest of a large transversal public with a broad geographic distribution. Thus, if from one side we are using SM to bridge academic research with general public, from the other the relations that our SM enable to establish with research teams at other universities or research centers are fostering cooperation among cultural heritage experts.

Last but not least, the SM initiative is promoting the involvement of the local resident community in our fieldwork research activities: the possibility provided by SM to directly interact with the archaeologists (through a digital medium) prompts locals to share crucial information deriving from their profound knowledge of the configuration of the landscape they live in.

Based on our direct experience, it's self-evident that SM have the potential to fundamentally change the character of our social and professional interactions, both on an interpersonal and a community level, and even the way we can collect data to be reused (following appropriate validation) within our research. Regrettably, digital public archaeology scholarship is not yet fully informed by established theory and methods that can support this journey, with the discipline just in its infancy, progressing through a handful of dedicated practitioners. Nevertheless, current trends in both research and practice of Digital Public Archaeology, as well as the role that research communication is increasingly being assigned by funding organisations (for example, the European Commission), leave few doubts that in the next years more human and financial resource investments will be necessary to promote the discipline and thus ensure an informed and knowledgeable cultural heritage communication.

References

- Akcora G C, Demirbas M 2010** *Twitter: Roots, Influence, Applications. Technical Report*, Department of Computing Science and Engineering State University of New York at Buffalo. Available at: <ftp://cogsworth.cse.buffalo.edu/pub/tech-reports/2010-03.pdf> [Last accessed: 25 July 2018].
- Akkanat, K 2012** *Communication and Interaction on Instagram. A Psychological Science Perspective*. Munich: GRIN Verlag.
- Amedie, J 2015** The impact of Social Media on Society. *Advanced Writing: Pop Culture Intersections*, 2. Available at: https://scholarcommons.scu.edu/cgi/view-content.cgi?article=1002&context=engl_176 [Last accessed: 23/03/2019].
- Bennato, D, Benhotman, H and Panconesi, A 2011** Processi di diffusione delle informazioni nelle reti digitali. Il caso Twitter. *Cultura e Comunicazione/ Culture and Communication*, 2: 72-78.
- Bland, R 2009** The development and future of the Treasure Act and Portable Antiquities Scheme. In: Thomas, S and Stone P (eds.) *Metal Detecting and Archaeology*. Suffolk: Boydell & Brewer Ltd, pp. 63-86.
- Bollwerk, E 2015** Co-creation's Role in Digital Public Archaeology. *Advances in Archeological Practice*, 3(3): 223-234.
- Bonacchi, C 2012** Introduction. In: Bonacchi, C (ed.) *Archaeology and Digital Communication. Towards Strategies of Public Engagement*. London: Archetype Publications, pp. xi-xix.
- Bonacchi, C, Bevan, A, Pett, D, Keinan-Schoonbaert, A, Sparks, Wexler, J and Wilkin, N 2014** Crowdsourced Archaeological Research: The MicroPasts Project. *Archaeology International*, 17: pp.61-68. DOI: <http://doi.org/10.5334/ai.1705>
- Bonacchi, C, Bevan, A, Pett, D, and Keinan-Schoonbaert, A 2015** Crowd- and Community-fuelled Archaeology. Early Results from the MicroPasts Project. In: Giligny, F, Djindjian, F, Costa, L, Moscati, P and Robert, S. (eds.) *CAA2014, 21st Century Archaeology. Concepts, Methods and Tools. Proceedings of the 42nd Annual Conference on Computer Applications and Quantitative Methods in Archaeology, Paris*. Oxford: Archaeopress, pp. 279-288.
- Bonacchi, C and Petersson, B 2017** Digital Co-production in Archaeology. Editorial, *Internet Archaeology*, 46. DOI: <https://doi.org/10.11141/ia.46.1>
- Brock, T P and Goldstein, L 2015** Blogging the Field

- School: Teaching Digital Public Archaeology. *Internet Archaeology*, 39. DOI: <http://dx.doi.org/10.11141/ia.39.8>
- Baldassarre G 2018** Open Salapia: il progetto di archeologia pubblica dello scavo di Salapia (Trinitapoli). In: D'Eredità A, Falcone A (eds.) *Archeosocial. L'archeologia riscrive il web: esperienze, strategie e buone pratiche*. Mozzecane: DielleEditore, pp. 121-144.
- Facebook 2018a**, *The Vindolanda Trust*. Available at <https://www.facebook.com/TheVindolandaTrust/> [Last accessed 13 August 2018].
- Facebook 2018b**, *VEiL - Visualising Engineered Landscapes*. Available at <https://www.facebook.com/VEiL-Project/> [Last accessed 13 August 2018].
- Griffiths, S, Edwards, B, Raimund, K, Labrosse, F, Miles, H, Moeller, K, Roberts, J, Tiddeman, B and Wilson, A 2015** Crowd-sourcing archaeological research: HeritageTogether digital public archaeology in practice. *Internet Archaeology*, 40. DOI: <https://doi.org/10.11141/ia.40.7.3>
- Heinonen, K 2011** Consumer activity in social media: Managerial approaches to consumers' social media behavior. *Journal of Consumer Behaviour*, 10(6): 356-364. DOI: 10.1002/cb.376
- Hodder, I 1999** *The Archaeological Process: An Introduction*. Oxford: Blackwell.
- Instagram 2018**, *Veil Project*. Available at https://www.instagram.com/veil_project/?hl=it [Last accessed 13 August 2018].
- Java, A, Song, X, Finin, T and Tseng, B. 2007** Why We Twitter: Understanding Microblogging Usage and Communities. In: *Proceedings of the 9th WebKDD and 1st SNA-KDD 2007 Workshop on Web mining and Social Network Analysis*. New York: ACM, pp. 56-65.
- Miller, V 2008** New Media, Networking and Phatic Culture. *Convergence*, 14(4): 387-400. DOI: <https://doi.org/10.1177/1354856508094659>
- MSU Campus Archaeology Program 2018**. Available at <http://campusarch.msu.edu/> [Last accessed 13/08/2018].
- Perry, S and Beale N 2015** The Social Web and Archaeology's Restructuring: Impact, Exploitation, Disciplinary Change. *Open Archaeology* 2015, 1: 153-165.
- Richardson, L-J 2012** Twitter and archaeology: an archaeological network in 140 characters or less. In: Bonacchi, C (ed.) *Archaeology and Digital Communication. Towards Strategies of Public Engagement*. London: Archetype Publications, pp. 15-24.
- Richardson, L-J 2013** A Digital Public Archaeology? *Papers from the Institute of Archaeology*, 23(1). DOI: <http://doi.org/10.5334/pia.431>
- Richardson L-J 2018** Ethical Challenges in Digital Public Archaeology. *Journal of Computer Applications in Archaeology*, 1(1): 64-73.
- Rocks-Macqueen, D 2016** Digital Public Engagement through Social Media in Archaeology – How to Choose. *Present Pasts*, 7(1): 1. DOI: <http://dx.doi.org/10.5334/pp.62>
- Traviglia, A, 2018** *VEiL Visualising Engineered Landscapes: an archaeological approach to unlock environmental resilience and sustainability in antiquity*. Available at <http://www.unive.it/pag/18545/> [Last accessed 13/08/2018].
- Twitter 2018**, *VEiL Project*. Available at <https://twitter.com/veilproject> [Last accessed 13 August 2018]
- Youtube 2018**, *VEiL Project VPAI*. Available at <https://www.youtube.com/channel/UCV2msywmejA-OkQ8hAtSYvba> [Last accessed 13 August 2018]
- Walker, D 2014a** Antisocial media in archaeology? *Archaeological Dialogues*, 21: 217–35.
- Walker, D 2014b** Decentering the discipline? Archaeology, museums and a social media. AP: *Online Journal in Public Archaeology*, Special Volume 1-2014: 77-102..