

Software Management Plan

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Opportunities for improving the social media marketing for the ParAqua COST Action

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1. Introduction

Social media are a valuable tool of modern-day communication. They enable various opportunities such as dissemination, communication, increased visibility, and easy interactions between individuals, businesses, and other organizations at a low cost. An increasing gain in popularity in scientific community in recent years is observed. Scientists use them to set up a personal profile, or a page for their laboratory or organization. It can be used to establish formal and informal connections, seek job positions, further develop their career, present their work to the public, etc. (Fig. 1).



Fig 1. Scheme of social network platforms goals (modified according to Jarreau, Paige B (2015): #MySciBlog Interviewee Motivations to Blog about Science. figshare.)

The ParAqua COST Action currently uses four social media platforms: Facebook, Instagram, Twitter, and LinkedIn. Each platform provides slightly different opportunities for creating an online identity. For example, Twitter has a 280-character limit for posts. This makes the “tweets” concise and enables the audience to get past many different posts and look more into those that they find interesting. Facebook does not have the character limit which enables the posts to be more detailed. Instagram is a photo or video-based social media platform. Like Twitter, it is also a “fast-moving” platform that allows users to explore public timeline as well as the stories posted by the followed profiles. That way is possible also to

add a story that contains a click-through leading to the original post to make sure that the post will gain visibility. LinkedIn is a site designed to suit the need for more professional relationships, networking, and increasing career opportunities.

Proper use of these social media platforms can stimulate collaborations between scientists and stakeholders and create a network of individuals and organizations with common goals. The goal of this report is to start the tracking of the useful metrics on ParAqua's social media platforms and to use them as a basis for adapting the Action's social media strategy in accordance with digital marketing specialists' advice and other COST actions' strategies. To increase collaboration and expand the network of scientists with common interests, a list of upcoming conferences is proposed following the Action's agenda and its members' interests.

2. Overview of the stats of the social media platforms used by the ParAqua COST Action

2.1. Methodology

The social media accounts have been opened at the beginning of the Action (LinkedIn and Twitter January 2022, Facebook and Instagram April 2022) with the common username "ParAqua_CA21025" for Instagram, LinkedIn and Twitter and "ParAqua COST Action" for Facebook. After reaching a sufficient number of followers on all platforms an analysis is needed to begin the tracking of meaningful metrics. The number of likes and followers on the ParAqua social media platforms has been tracked and analysed in September 2022. That way the strategy for social media marketing can be slightly altered to better suit the audience on any given platform and therefore optimize the effort.

An analysis has been made on all platforms. For Facebook and Instagram an integrated analytics tool was used. Since the Facebook page had less than 100 followers at the time of analysis, only certain metrics were available. For interactions and discovery, an overview of the past 30 days (September 1-30, 2022) is presented. The data on Instagram reach was also available only during the same period. Page reach represents the number of people who saw any content from the page on their timeline, and people who visit the page are represented by "page visits". The proportions of groups on each platform were determined by hand. Followers' profiles with suspicious personal information were listed under the category "other". Since no prepaid programs were available while conducting this analysis, data for Twitter and LinkedIn are presented with less detail.

2.2. State of social media thus far

Thus far, of all the social media platforms used by the Action, Instagram has the highest number of followers (114) followed by Twitter (86) and Facebook and LinkedIn (60) (Fig. 2).

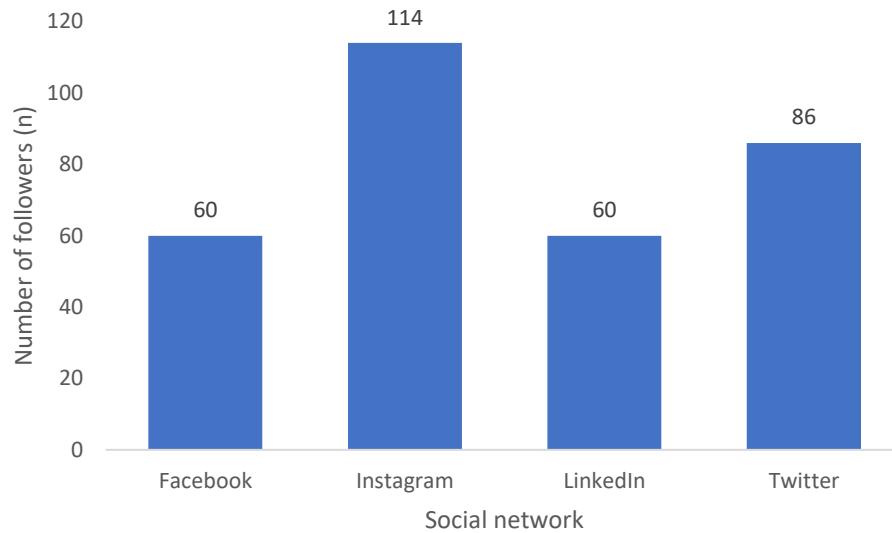


Figure 2. Number of followers on all social media platforms used by the Action

2.2.1. Instagram

The Action's Instagram profile has the biggest proportion of organizations among its followers of all the social media pages used. Males and females are represented in a nearly equal percentage (Fig. 3).

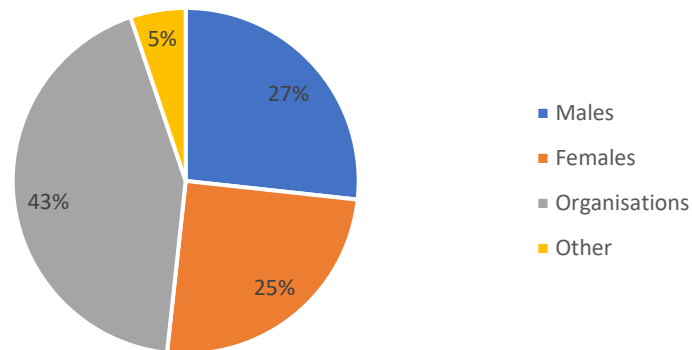


Figure 3. Representation of different groups of the Action's Instagram followers extracted on September 30th, 2022

The reach of the Action's Instagram profile during the period 1-30 September 2022 is slightly tilted towards the female audience (Fig. 4).

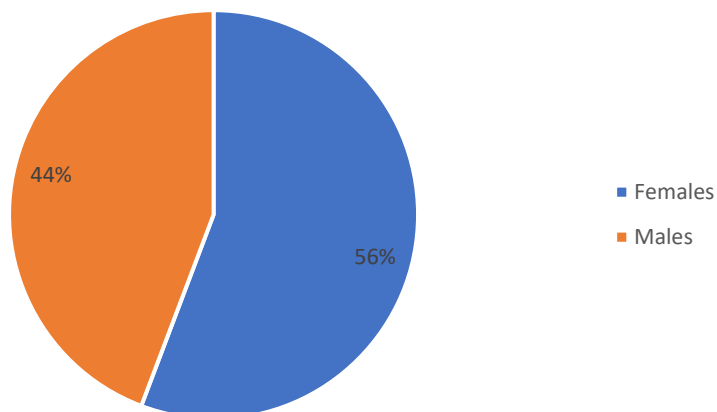


Figure 4. Reach of Instagram posts on male and female audience in the period 1-30 September 2022

The reach of the Action’s Instagram profile during the same 30-day period was the biggest among the younger crowd. The age groups that are predominantly exposed to the content are between 25 and 34, and between 18 and 24 years old. People older than 45 are less likely to stumble upon shared posts (Fig. 5).

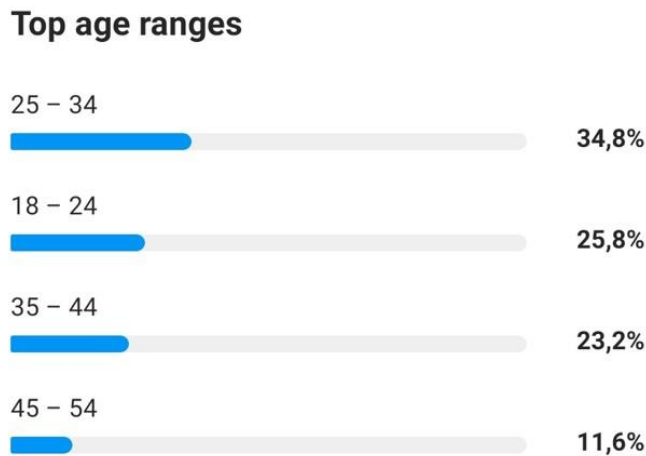


Figure 5. Age groups of the reached audience by the Action’s Instagram page in the period 1-30 September 2022

The reach of the Actions Instagram profile during the 30-day period was biggest in two countries outside of Europe, Turkey and Iran, followed Spain and France (Fig. 6).

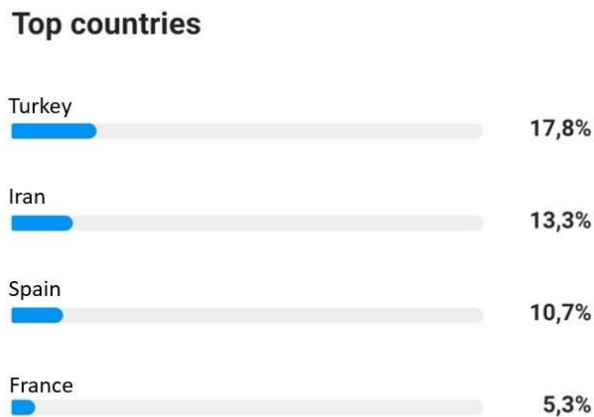


Figure 6. Top countries of the reached audience by the Action’s Instagram page in the period 1-30 September 2022

The reach of the Actions Instagram profile during the 30-day period was biggest in Almería (Spain) and followed by Polydorion (Turkey), Tehran (Iran), and Zagreb (Croatia) (Fig. 7).

Top cities



Figure 7. Top cities of the reached audience by the Action's Instagram page in the period 1-30 September 2022

1.1.1. Twitter

Among the followers on the Action's Twitter profile males and females are roughly equally represented. Organizations make up roughly one-fifth of the followers (Fig. 8).

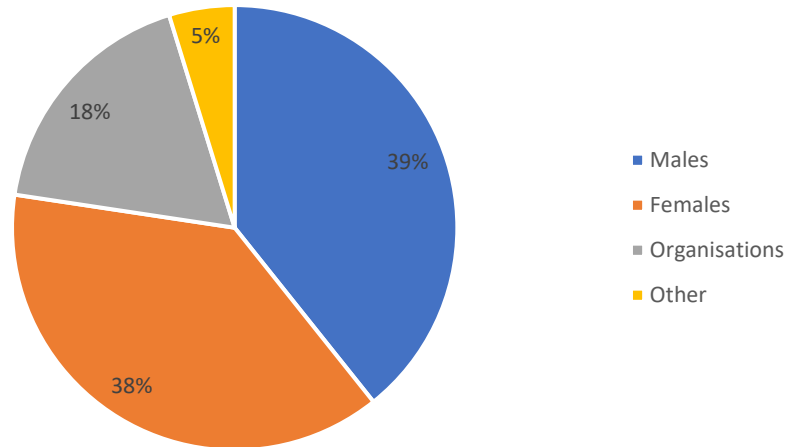


Figure 8. Representation of different groups of the Action's Twitter followers extracted on September 30th, 2022

Top Tweets during the last three months (Fig. 9) concerned the Grant Call information and proposed topic with respectively 1.223 and 734 impressions (i.e., the number of total views in the twitter page), followed by the tweets communicating the Core Group meeting in Paris and again coinciding with a Network activity.




Tweets	Top Tweets	Tweets and replies	Promoted	Impressions	Engagements	Engagement rate
	ParAqua COST Action @ParAqua_CA20125 · Aug 3 NEW Collection date for applications for #ParAqua #STSMs , Conference Grants and Virtual Mobility Grants. All the info on the Action webpage paraqua-cost.eu #ZoosporicParasites #COST #CA20125 pic.twitter.com/LLUyAs4SSJ View Tweet activity			1,223	53	4.3%
	ParAqua COST Action @ParAqua_CA20125 · Aug 4 PROPOSED TOPIC FOR VIRTUAL GRANT to support the preparation of communication tools (poster, leaflet, infographic) to promote the #ParAqua Grant Awarding system. #ZoosporicParasites #COST #CA20125 . All the info below and on our website paraqua-cost.eu/grants-open-ca... pic.twitter.com/huAtlTUJgb View Tweet activity			734	30	4.1%
	ParAqua COST Action @ParAqua_CA20125 · Sep 27 We welcome online and onsite participants to our hybrid Extended Core Group Meeting and Young Researchers and Innovators Forum on #ZoosporicParasites . Ready to start this day full of interesting presentations! #AlgalBiotech @COSTprogramme pic.twitter.com/JOlyDVDR6M View Tweet activity			688	46	6.7%

Figure 9. Top Tweets during the period July –September 2022

1.1.2. Facebook

Since the creation of the Facebook page 3726 people were reached. Three peaks were observed, two of them coinciding with the Action's meetings in Cyprus (early July 2022) and Paris (late September 2022) (Fig. 10).

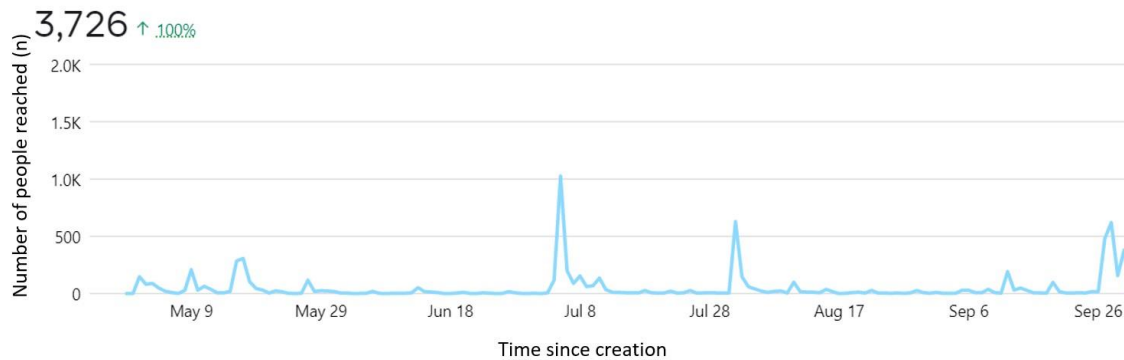


Figure 10. People reached with the Action's Facebook page from its creation until September 30th

A total of 297 people visited the Action's Facebook page since its creation in late April 2022. Several peaks can be noticed when the Facebook page had the most visits. Some of them were probably a consequence of a high number of people reached in the same periods (Fig. 11).

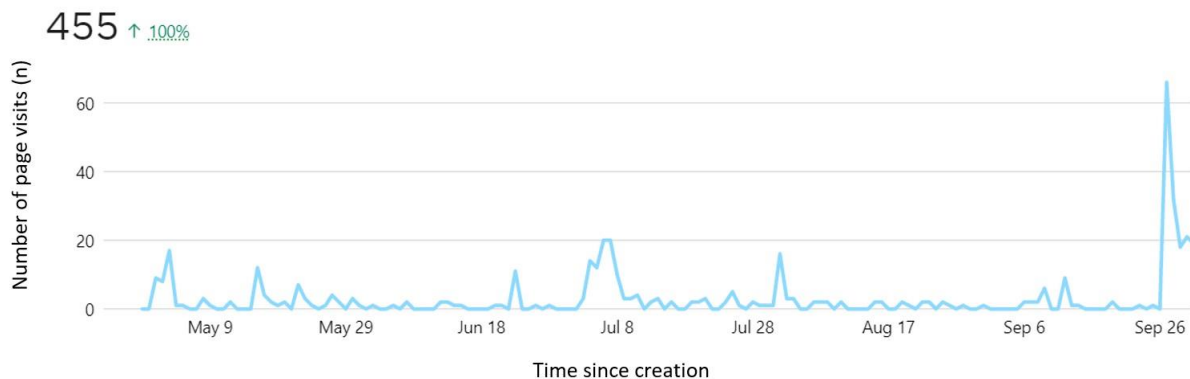


Figure 11. Facebook page visits from its creation until September 30th

Facebook page so far managed to get 42 likes. Most likes were observed in the period following its creation, and afterward periodically with several peaks (Fig. 12).

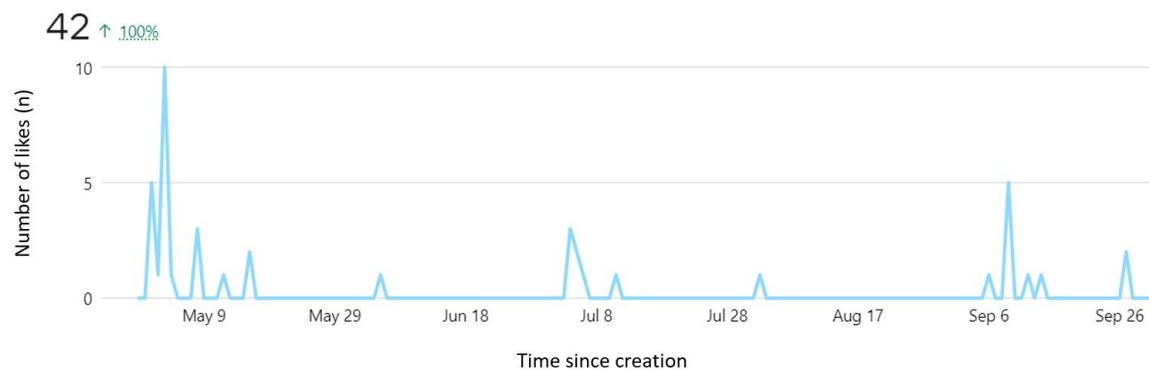


Figure 12. Facebook page likes from its creation until September 30th

The posts reached 1282 people during the period September 1-30, 2022, which is roughly 34% of the total number of people reached. Nearly half of the people that were reached engaged on the posts, 12 people started following, and 10 liked the page (Fig. 13).





Discovery		
	Post reach	1,282
	Post engagement	679
	New Page likes	10
	New Page Followers	12

Figure 13. Discovery of the ParAqua Facebook page extracted on September 30th, 2022

During the same 30-day period the Facebook page got 292 reactions and 184 photo views. Number of comments, shares, and link clicks was relatively low (Fig. 14).

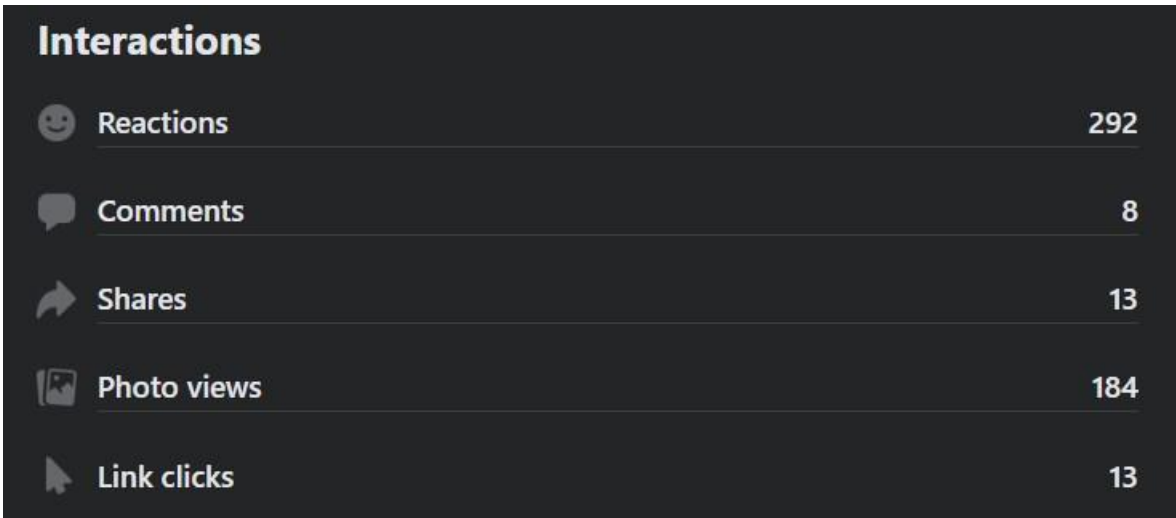


Figure 14. Interactions on ParAqua Facebook page in the period 1-30 September 2022

Top three Facebook posts from July to September are shown in Figure 15, and all of them are concerning the meeting in Paris.

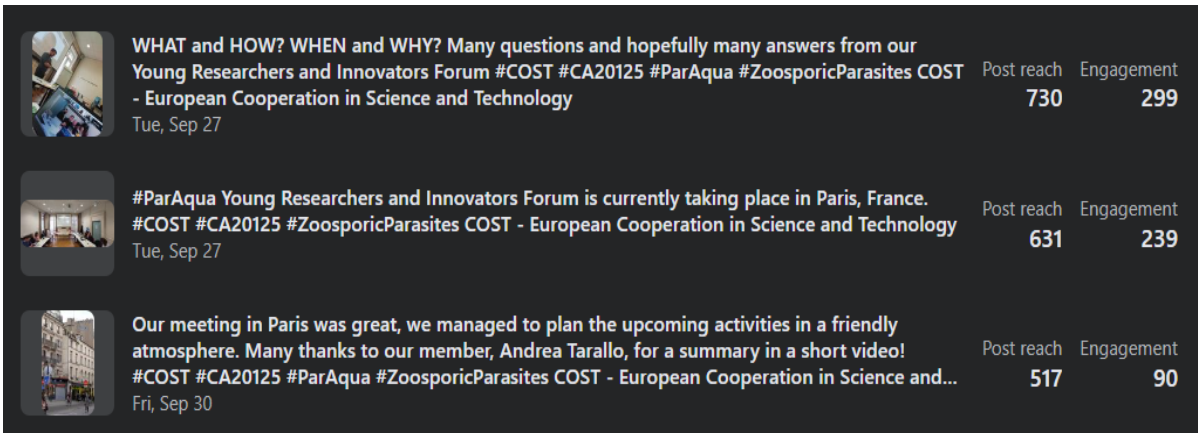


Figure 15. Top three Facebook posts from July to September 2022

1.1.3. LinkedIn

The followers on the Action's LinkedIn profile are predominantly private profiles and organizations make up only a small percentage. Males and females are roughly equally represented (Fig. 16).

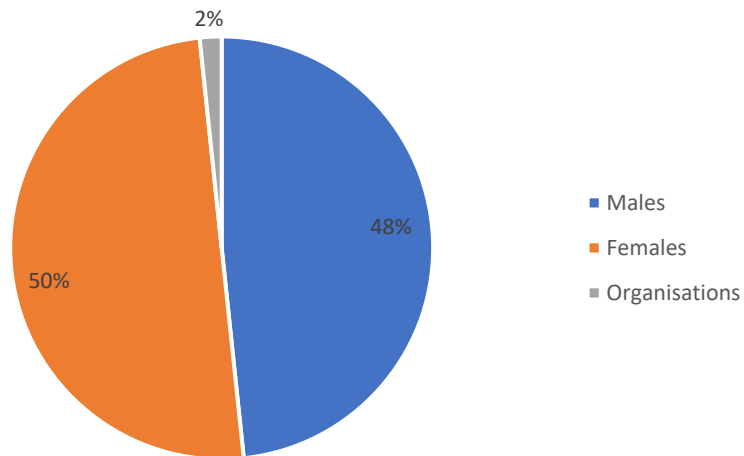


Figure 16. Representation of different groups of the Action's LinkedIn followers

2. Suggestions for future social media strategy for ParAqua COST action

In the beginning, the ParAqua COST Action had the same plan for the management on all four platforms used. A short presentation would be posted of one of the Action's members on a weekly basis, and information would be shared on the meetings, workshops, training schools, and similar activities. No posts were boosted which would expand the reach it would otherwise get. For comparison purposes, in Figure 17 a representation is given by the Pew Research Center on the share of different types of posts on Facebook from 30 science-related pages.

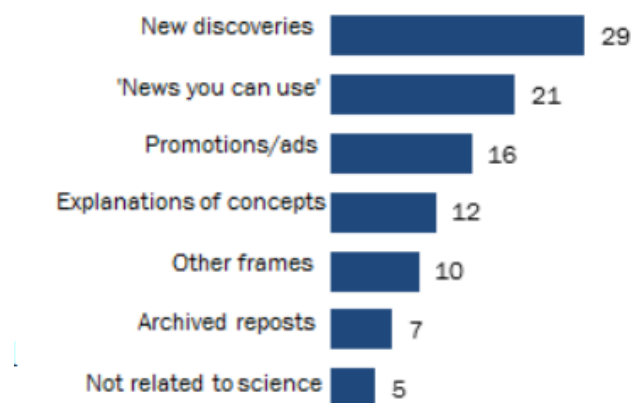


Figure 17. Percentage of Facebook posts on 30 science-related pages (source: Pew Research Center analysis of a random sample of Facebook posts from 30 popular science-related pages, January to June 2017. Data from the public Facebook Graph API. "The Science People See on Social Media")

It is noticeable that the reach and number of visitors on the Action's Facebook page is at its highest during the meetings and training schools. This is probably due to a higher number of posts and shares by the Action's members during those periods. To make the reach higher it is advisable for all the Action's members to share and engage more with the posts in between the meetings as well. During September 2022 alone, a significant increase in visibility can be observed. Although the Facebook page reached over 3700 people, the number of post engagements was still fairly low. The role of the Facebook page is yet to be determined since the number of followers at the time of the analysis was too low to analyze the demographics. On the other side, the top two tweets were reached during a period between meetings and referred to announcements of the Grant calls. This shows the interest of Twitter users in network activities in a broad sense and not only related to ongoing events, but also the interest in using social media to effectively communicate announcements that can be of interest for the Action to spread widely. Some digital communication specialists suggest that people can get more involved with the posts by creating various polls or asking for opinions on different subjects. One of the ways to get more followers in a relatively short period is to post more frequently and create diverse content. So far most of the posts

contained visual and textual representations. Different online marketing companies suggest the diversification of posts that include the creation of ads (video, text, pictures), posts in form of posters, headlines with short explanations containing a click-through, and interesting facts or information related to the Action's agenda.

Most of the audience reached by the posts on Instagram is younger than 35 years old, which is to be expected since younger people use social media platforms more often. A good idea would be to expand the use of hashtags and start using those that are more popular, especially within the younger crowd. For example, #science is the most often used hashtag in the scientific community by people between the ages of 25-34 years old. Other trending hashtags in science are listed on a web page: <https://top-hashtags.com/hashtag/science/>.

Instagram has the biggest share of organizations among its followers, followed by Twitter. These organizations contain stakeholders and companies in the algae biotech industry. This calls for the optimization of content to better suit their needs. For example, it can be used to disseminate the Action's contribution, such as methods development, which can help the industry mitigate some of the obstacles in production. Channels can be created to guide specific groups to the content meant specifically for them. For these channels to work the information should be presented in a simple and non-ambiguous manner. For example, one way to do it on Instagram is to post a story containing brief information on the selected topic and a "swipe up" link to the ParAqua web page where additional information can be found. Since Twitter has the limit for the character number and the posts need to be short it is generally used to catch the followers' attention, and again to forward the traffic to the Action's web page or another platform where a reader can read more about the proposed subject. Apart from adapting the content on the social media platforms, clearly distinguished sections are needed on the Action's web page to ease access to the desired content.

LinkedIn has the best possibilities for targeting the desired audience already built in. This allows targeting the audience by geographical criteria, age groups, level of education, etc. It is the most "professional" of all four used social network platforms. The ParAqua followers on LinkedIn are mostly academics, which is also the case with all other COST Actions profiles that were observed while researching for this report. For that reason, the content posted on LinkedIn should contain information on written papers, webinars, conferences, etc... While we wait for the first results to be published by ParAqua, notifications on the work done by its members should be posted to give a general idea on their interests and expertise to the stakeholders and other parties of interest. Also, the creation of a Research Gate page for the Action is advised to enable easier access to papers.

An effort has been made by COST to stimulate the integration of gender and sex analysis when carrying out research. This can stimulate innovation and respond better to social needs and interests by opening new perspectives and contribute to a more inclusive society. Although the reach on the Action's Instagram is higher among the female crowd, the gender balance among the followers is equal on Twitter, LinkedIn, and Instagram.

This preliminary analysis gave insights into the state of social media platforms' stats thus far, as well as the followers' demographic and visibility of the Action. Data collected can be used as a starting point for future tracking of meaningful metrics. To control the progress and the effectiveness of the proposed strategies in the upcoming months an analysis like this one should be done periodically. It is advisable to use prepaid programs that offer a broader range of metrics to track. That way a more comprehensive

overview could be created, allowing for a fine-tuning of the social media marketing strategy. The desired output of social media marketing is to create connections with different organizations, stakeholders, and decision-makers which is crucial to create a framework with a common goal and provide the right information to the decision-makers.

3. List of the upcoming conferences

The social media strategy for the next years will include regular posts about conferences and workshops of interest for ParAqua members. Therefore, a list has been made containing conferences and workshops in the near future. Scientific interests of the Action members have been taken into consideration while creating the list, so it contains a somewhat broad specter of events but is still related to the Action's mission. Events from December 2022 to the end of 2023 were selected. A total of 18 events were found and divided into two categories depending on the locality: inside (Table 1) and outside Europe (Table 2). These events provide opportunities for networking as well as presenting the program's work and establishing a connection with stakeholders. Reminders for the openings of the registrations or deadlines will be posted on social media platforms in advance to provide everyone with enough time to apply.

Table 1. List of events that will be held in Europe

Name	Type of event	Organiser	Location	Duration	Deadline for submission	Web page
18th World Bioenergy Congress and Expo	Conference	Conference Series	London, UK	March 29-30, 2023	Not specified	https://bioenergy.insightconferences.com/
Algae based carbon offsets for CO2 mitigation	Workshop	European Algae Biomass Association	Brussels, Belgium	March 7, 2023	-	https://algae-workshops.org/algae-based-carbon-offsets-for-co2-mitigation-2023/
11th Annual European Algae Industry Summit	Conference	Active Communication International	Lisbon, Portugal	April 19-20, 2023	Not specified	https://www.wplgroup.com/aci/event/european-algae-industry-summit/
ASLO Aquatic Sciences Meeting 2023: Resilience and Recovery in Aquatic Systems	Conference	Association for the sciences of Limnology and Oceanography	Palma de Mallorca, Spain	June 04-09, 2023	February, 2023	https://www.aslo.org/palma-2023/
Symposium for European Freshwater Sciences	Conference	Freshwater Biological Association, European Federation for Freshwater Sciences	Newcastle, UK	June 18-23, 2023	February 24, 2023	https://www.sefs13.com/
Aquaculture Europe 2023: Balanced Diversity in Aquaculture Development	Conference	European Aquaculture Society	Vienna, Austria	September 18-21, 2023	May 1, 2023	https://www.aquaeas.eu/events/future-eas-events

Table 2. List of events that will be held outside of Europe

Name	Type of event	Organiser	Location	Duration	Deadline for submission	Web page
Species on the Move 2023	Conference	Florida Climate Institute, University of Florida	Florida, United States	May 15-19, 2023	Not specified	https://pwd.aa.ufl.edu/sotm/
World Aquaculture 2023: Supporting Strength in Aquaculture	Conference	World Aquaculture Society, Asian Pacific Aquaculture	Darwin, Australia	May 29-June 1, 2023	February 1, 2023	https://www.was.org/meeting/code/WA2023
International Conference on Algal Biomass, Biofuels and Bioproducts	Conference	Elsevier	Waikoloa Beach, Hawaii, USA	June 12-14, 2023	January 23, 2023	https://www.elsevier.com/events/conferences/international-conference-on-algal-biomass-biofuels-and-bioproducts
29th International Conference of the World Association for the Advancement of Veterinary Parasitology, Parasites: Global Impacts, Local Solutions	Conference	World Association for the Advancement of Veterinary Parasitology	Chennai, India	August 20-24, 2023	February 28, 2023	https://waavp2023.com/
The Biodiversity Conference 2023: Listen to the Country	Conference	All five Western Australia (WA) Universities, Department of Biodiversity, Conservation & Attractions, WA Biodiversity Science Institute, WA Marine Science Institute.	Perth, Australia	October 10-12, 2023	Not specified	https://www.biodiversity2023.com/
20th International Conference on Harmful Algae (ICHA)	Conference	International Society for the Study of Harmful Algae (ISSHA)	Hiroshima, Japan	November 5-11, 2023	Not specified	https://hab.who.edu/timeline/20th-icha/

4. Conclusions

1. Instagram is the social network platform with the biggest share of organizations among its followers, followed by Twitter. An emphasis should be placed on their role in connecting the Action to the organisations and stakeholders.
2. LinkedIn has the biggest proportion of academics among the followers and therefore the content should contain information on written papers, webinars, conferences, etc...
3. The role of Facebook is still unclear due to insufficient number of followers to conduct a demographic analysis. The suggested way to attract more followers is to diversify the content and post more frequently.
4. To control the progress and the effectiveness of the proposed strategies in the upcoming months an analysis like this one should be done periodically.
5. The list of conferences has been made containing events taking place in the near future which is meant to inform the members about opportunities for creating connections with different organizations, stakeholders, and decision-makers.

Acknowledgments

I would like to thank my mentors, Ana Gavrilović and Serena Rasconi, for providing help and useful advices while writing this report.

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COST (European Cooperation in Science and Technology) is a funding agency for research and innovation networks. Our Actions help connect research initiatives across Europe and enable scientists to grow their ideas by sharing them with their peers. This boosts their research, career and innovation.

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