



FLEXIGROBOTS

D7.11 Communication Report 2

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List of Acronyms

| Abbreviation / acronym | Description |
|---------------------------|--|
| AFL | AgriFood Lithuania |
| AGS | AgroSmart |
| BIO | BioSense Institute |
| CEPS | Centre for European Policy Studies |
| CSIC | Spanish National Research Council |
| D | Deliverable |
| DAR | Dissemination Activity Registry |
| DIH | Digital Innovation Hub |
| EU | European Union |
| IDSA | International Data Spaces Association |
| КРІ | Key Performance Indicator |
| LUKE | Natural Resources Institute Finland |
| М | Month |
| MTE | MTech Digital Solutions |
| PRO | Probot Oy |
| PU | Public |
| RGB | Red Green Blue |
| RTS | Radio Television of Serbia |
| SER | Seresco |
| т | Task |
| TER | Bodegas Terras Gauda |
| URL | Uniform Resource Locator |
| UAV | Unmanned Aerial Vehicle |
| UGV | Unmanned Ground Vehicle |
| VTT | VTT Technical Research Centre of Finland Ltd |
| WP | Work Package |
| WU | Wageningen University |
| ZEL | Zeleni hit |

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Executive Summary

This deliverable reports on FlexiGroBots dissemination and communication activities that took place between December 2021 (M12) and November 2022 (M23). The implemented activities were part of the dissemination and communication plans presented at D7.1, D7.2 and D7.10, respectively. The activities that will take place in December 2022 (M24) will be included in D7.12 Communication report 3, which will inform about activities done within the third year of project implementation.

Project activities described in this deliverable represent a joint effort of the consortium partners in order to increase the visibility of FlexiGroBots among targeted stakeholders. Performed activities contributed to positioning FlexiGroBots as an innovative project with a unique value for different engineers, service providers, as well as farmers to deploy flexible heterogeneous multi-robot systems that will contribute to empowering the European agrifood sector.

Dissemination activities are the responsibility of T7.1 led by Wageningen University (WU), while communication activities are part of T7.2 led by BioSense Institute (BIO). Leader of T7.2 until recently was ATOS which still contributes to this task to a significant extent. Together, FlexiGroBots successfully promotes its achievements at various levels, which is best shown by the results achieved so far:

- Website: 12 021 unique visitors, 13 024 sessions, 18 768 page views and 736 references to the project on search engine;
- Twitter: 318 tweets, 1 747 retweets and likes, 231 followers, 3.32% engagement rate and 70 554 impressions;
- LinkedIn: 957 visitors, 7.17% reactions, 46 629 organic impressions and 397 followers;
- YouTube: 7 videos, 21 followers and 983 views;
- Marketing material: 1 project poster, 1 promotional video, 1 brochure, 2 official press releases, more than 13 000 000 people reached by press releases and 3 newsletters (4th issue will be published in January 2023);
- Events: Participation in 46 events/conferences/workshops/webinars with an audience of more than 100 000 people;
- Scientific publications:
 - 1 journal article published;
 - 3 journal articles under review;
 - 15 journal articles, 13 conference articles and 1 book chapter in preparation.

All of the communication & dissemination KPIs set by M24 have been achieved, except Scientific publications which will be given more importance during the last year of the project, as well as LinkedIn Visitors, which are expected to reach the target by the end of the 2022.

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1 Introduction

The FlexiGroBots project strives to create a platform based on flexible heterogeneous multirobot systems which would enable intelligent automation in precision agriculture. As such, the platform would provide ample benefits, as well as business opportunities to a wide audience of stakeholders.

The dissemination task, as outlined in D7.1, D7.2 and D7.10, intends to make the results of the project public utilising adequate means, as well as to bring the research that is being done to the attention of various stakeholder and interest groups. This would be achieved by disseminating the results in a targeted way, allowing these groups to utilise the results for the benefit of their business ventures and activities. By focusing on the promotion of the activities and results to as wide an audience as possible, the communication task works on reaching out to society and the general public and to show how EU funding can be utilised to tackle societal challenges.

In order to efficiently execute dissemination and communication activities and avoid duplicating efforts, an appropriate workflow based on the collaboration of these activities was developed. This workflow employs pillars that were defined in D7.10 – Visibility, Awareness and Engagement, and has gone a long way in improving the results of the Dissemination (T7.1) and Communication (T7.2) tasks, as will be reported here.

In short, the collaboration between T7.1 and T7.2 is based on communicating the activities that are planned and executed within T7.1 to T7.2 so they can be promoted on the project website, various social media networks and to provide support with organisation of events should that be necessary. Other than that, T7.2 is focused on creating blog posts, press releases, developing different communication materials and engaging WP7 partners in these activities in order to improve and amplify the impact of communication efforts.

Future activities will be reported in the final deliverable D7.12 (M36).

1.1 Purpose of the document

This deliverable will report on the work and activities performed within T7.1 – Dissemination and T7.2 – Communication during the M12-M23 period of the FlexiGroBots project.

An overview of strategies outlined in previous deliverables, as well as a report on specific activities performed by partners to increase the visibility of the project to stakeholders, will be presented.

Additionally, given the fact that the project review report indicated the need to improve scientific dissemination, the necessary steps that were taken to increase the scientific production & contribution of the project will also be briefly presented. In this regard, it is

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important to point out that a full list of scientific publications planned for the following period has been made. Also, planned events such as prime robotics conferences ICRA/IROS/RSS, European Robotic Forum – typical forum for exploitation and dissemination, various exhibitions, as well as potential dissemination actions with identified DIHs are mentioned in this report.

1.2 Structure of the document

The document is divided into the following 5 Sections:

- Section 1 includes the Introduction, Purpose and description of the deliverable, along with a detailed list of KPIs achieved by Dissemination (T7.1) and Communication (T7.2) until M23;
- Section 2 provides an overview of the communication efforts of BIO, the lead for T7.2, reports on the performed activities, evaluates communication efforts by analysing defined KPIs and gives an overview activities that are planned for 2023;
- Section 3 provides an overview of the communication efforts of WU, the lead for T7.1, reports on the performed activities, evaluates communication efforts by analysing defined KPIs and gives an overview activities that are planned for 2023;
- Section 4 provides a short description of the involvement of individual partners in the activities performed within T7.1 and T7.2;
- Section 5 provides the conclusions and next steps for these tasks.

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2 Communication Strategy

During the second year of the project, the main objectives of Phase 2 of the communication strategy were reaching out to target stakeholders and achieving maximum visibility and awareness of the FlexiGroBots project. This was achieved by communicating project achievements, primarily regarding the FlexiGroBots Platform and Pilots, as well as technical WPs. The final goal is to engage with stakeholders regarding the potential adoption of FlexiGroBots Platform and developed technologies.

The strategy of communicating project activities and achievements during the M12-M23 period included their promotion through press releases and media publications, newsletters, blogs, engagement on social media with valuable and creative content, as well as creating numerous marketing materials such as project brochure, poster, promotional video, new social media banners etc.

2.1 Communication Reporting M12-M23

The table below (Table 1) shows the target KPIs for the second year of project implementation (Year 2), as well as those achieved since the start of the project, from January 2021 (Month 1 - M1) to November 2022 (M23). Considering the time frame for the preparation of this document, the activities planned for December 2022 (M24) have not yet been fully statistically processed. Therefore, this report mainly shows the values obtained for the first 23 months of the project, with an emphasis on the M12-M23 period because the information for the first 11 months have already been described in detail in D7.10 Communication Report 1. Accordingly, communication and dissemination activities conducted during the M24-M36 period will be reported in the upcoming deliverable – D7.12 Communication Report 3.

| Туре | Key Performance Indicators (KPIs) | Target by Year 2 (M24) | Achieved until November 2022 (M23) |
|---------|--|------------------------------|---------------------------------------|
| Website | Unique Visitors | 4000 | 12 021 |
| | Sessions | 5333 | 13 024 |
| | Page Views | 8000 | 18 768 |
| | Number of References to the project on the search engine | 30 | 736 |
| Twitter | Tweets | 250 | 318 |
| | Retweets/Likes | 550 | 1747 |

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| Туре | Key Performance Indicators (KPIs) | Target by Year 2 (M24) | Achieved until November 2022 (M23) |
|-----------|---------------------------------------|------------------------------|---|
| | Followers | 200 | 231 |
| | Engagement Rate | >1% | 3.32% |
| | Impressions | 70 000 | 70 554 |
| LinkedIn | Visitors | 1000 | 957 |
| | Reactions | 1.2% | 7.17% |
| | Organic Impressions | 15 000 | 46 629 |
| | Followers | 200 | 397 |
| YouTube | Followers | 20 | 21 |
| Marketing | Project Poster | 1 | 1 |
| Material | Video | 1 | 1 |
| | Brochure | 1 | 1 |
| | Press Releases | 2 | 2 |
| | Audience reached by Press Releases | 1500 | +13 000 000 |
| | Newsletters | 4 | 4 (4 th issue will be published in January 2023) |
| Events | Industrial conferences | 1 | 10 |
| | Industrial exhibitions | 1 | 11 |
| | Audience reached | 500 | 102 470 |

 Table 1: Communication KPIs achieved in the M1-M23 period

Each activity listed in Table 1 is described in detail in the following sections.

2.1.1 FlexiGroBots Website

The FlexiGroBots website (<u>https://flexigrobots-h2020.eu/</u>), the main source of all significant information about the project, clearly communicates project aims, activity and achievements to the scientific community, as well as to the wider audience. Its regular maintenance by publishing relevant and creative content, such as latest news & events, monthly blogs, press

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releases, biannual newsletters, scientific and non-scientific publications, videos, media appearances, marketing material, deliverables, etc. enable the project to have a strong online presence.





The current structure of the website (Figure 1) is more informative – it represents an updated version of the previous one in order to provide more detailed information about the project and results achieved so far. In this regard, an animated video showing the aims of the project was made and located within the home page (Figure 2). The page about the cutting-edge FlexiGroBots Platform (Figure 3), which clearly shows its features and benefits, has been relocated to the main menu and thus made more accessible to website visitors. Also, the Newsletter section, which contains biannual overviews of each work package progress, can now be found under the News & Events tab.

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Figure 2: FlexiGroBots website – Home page



Figure 3: FlexiGroBots Platform page

The next step in revamping the website is the relocation of the Pilots section to the main menu, in order to make the Pilots research progress more visible and accessible.

When it comes to the metrics, we used the Google Analytics platform to collect relevant statistical data from the website in order to monitor and provide insights into website traffic. Figure 4 shows Audience Overview – obtained data regarding the number of users, page views, sessions, pages per session and average session duration.

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Figure 4: FlexiGroBots Website – Audience overview (M12-M23)

In accordance with the data presented, during the M12-M23 period the FlexiGroBots project website had 6948 users who initiated at least one session on the website. Also, the total number of sessions in this period is 7562, whereby both parameters increased by 39% and 38%, respectively, compared to the first 11 months of the project. This is a clear sign that we are on the right track to increase the project's online presence.

The analysed website traffic (Figure 5) resulted in 10 199 page views (increased by 19% compared to the M1-M11 period), with an estimated 1.35 pages per session and average session duration of 00:35.

| Country Users | % Users |
|------------------------|---------|
| 1. 💶 Spain 1,612 | 23.19% |
| 2. 🔳 Germany 883 | 12.70% |
| 3. 🖶 Finland 645 | 9.28% |
| 4. 💌 Serbia 514 | 7.39% |
| 5. 🚘 United States 458 | 6.73% |
| 6. 🔤 Netherlands 373 | 5.37% |
| 7. 🚺 Italy 315 | 4.53% |
| 8. 🚺 Belgium 234 | 3.37% |
| 9. 🚺 France 225 | 3.24% |
| 10. 🔤 Lithuania 155 | 2.23% |

Figure 5: Website traffic by countries

As in the first 11 months of project implementation, the majority of the website users are from countries represented by the consortium partners such as Spain and Finland. However, compared to the M1-M11 period, the number of users from other countries represented by

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FlexiGroBots partners, such as Germany and Serbia, also increased significantly – by 341.5% and 150%, respectively.

Germany represents one of the countries with a need for technologies such as those being developed by the FlexiGroBots project, considering that its agricultural sector in 2022 has reached its highest growth in the last 30 years [1].

Due to Serbia also placing importance on the agricultural sector, as well as BioSense Institute (BIO) leading both Pilot 3 – Blueberries and T7.2 – Communication task, the project's activities were, to a greater extent, communicated and disseminated through national digital and printed media, together with guest appearances on national TV shows.

Another relevant parameter for analysis is how users access the website (Figure 6). The highest percentage of website traffic (67.8%) is through Direct Search – users accessed the website by entering the address in the web browser or via a saved tab containing the URL. Website traffic through Organic Search was 21.5% and the remaining 10.7% of traffic was through Social Media and Referral (links on third parties' websites). The plan for the next period is to increase website traffic through Organic Search and Social Media.





As announced in the previous deliverable (D7.10), in Phase 2 of project implementation we successfully increased website traffic to sections with content that represents project progress (Figure 7) such as FlexiGroBots Platform (increased by 65%), Deliverables (increased by 50%) and Blog (increased by at least 150%).

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| | 136 | |
|---|-----|--------|
| Flexible robots for intelligent automation of precision agriculture operations FlexiGroBots | | 30.75% |
| 2. Partners FlexiGroBots | 590 | 5.78% |
| 3. Objectives FlexiGroBots | 551 | 5.40% |
| 4. Platform FlexiGroBots | 411 | 4.03% |
| 5. Deliverables FlexiGroBots | 405 | 3.97% |
| 6. Digging Deeper into the Ethics of Robotics and AI FlexiGroBots | 319 | 3.13% |
| 7. Blog I FlexiGroBots | 288 | 2.82% |
| 8. Drones and robots joining forces for the best blueberry yield FlexiGroBots | 286 | 2.80% |
| 9. Pilots FlexiGroBots | 286 | 2.80% |
| 10. FlexiGroBots successfully completed its first field test within the grapevines pilot in Spain FlexiGroBots | 273 | 2.68% |



Metrics achieved so far for the FlexiGroBots website are in accordance with expectations and in line with the KPIs presented in <u>D7.2 Communication Plan & Communication Kit</u>.

2.1.2 Social Media

Social media platforms significantly help the communication and dissemination of project activities, which leads to an increase in visibility and enables reaching large audiences, as well as social networking. Also, social media enables direct connection with the target audience, such as companies potentially interested in technologies being developed by the FlexiGroBots project. In previous deliverables it was described that FlexiGroBots has accounts on **Twitter** and **LinkedIn** and uses them to promote project activities and achievements by sharing information such as scientific and non-scientific publications, testing within Pilots, participating in various events, blog posts and submitted deliverables. The project also has its own **YouTube** channel, which contains an animated project video, recordings of TV interviews, field tests, virtual sessions, etc.

The activities of the FlexiGroBots project are also promoted on other (external) social media accounts, mostly from consortium partners and related organisations. T7.2 keeps track of this type of content within the Dissemination Activity Registry (DAR) available to each partner and takes it into account when presenting the additional impact on FlexiGroBots-related visibility and reach. In this regard, Table 7 included in Annexes shows more than 140 social media posts on external accounts from the M12-M23 period.

The following sections show activities on social media accounts and monthly metrics for M12-M23, with regards to the first 11 months of project implementation.

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2.1.2.1 Twitter



Figure 8: @FlexiGroBots Twitter profile

As for the FlexiGroBots Twitter account – @FlexiGroBots (Figure 8), we continued the practice established during the first year of the project that proved effective:

- Using creative visuals, banners, emojis, as well as relevant hashtags
- Promotion of project activities event participation, media coverage, blog posts, publications, field tests, etc.
- Redirecting traffic to the project website
- Monitoring events and posts from targeted profiles working on similar topics as FlexiGroBots
- Retweeting and liking the content of relevant accounts
- Strengthening relationships with targeted stakeholders by mentioning them in posts
- Planning communication campaigns in advance
- Using Twitter Analytics to monitor posts and defining which content type works more efficiently

In the M12-M23 period, a total of 170 tweets were published on the FlexiGroBots profile. Of the total number, there were 127 original tweets, which is 108% more original tweets compared to the first 11 months of the project (Figure 9). The rest are represented by retweets and quoted external tweets, which are significant for the variety of content on the profile and interactions with other relevant accounts.

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Figure 9: Number of Tweets per month (M1-M23)

As announced in the previous deliverable, in Phase 2 of the project we tried to tweet original content at least two times per week. Therefore, Figure 10 represents T7.2 dedicated engagement in the communication of increased number of project activities in the second year of the project on Twitter.



Figure 10: Number of Tweets per month (M12-M23)

However, in M13 and M19 there was an expected decrease in publications on Twitter due to the normal reduction in the number of project activities during the winter holidays in January and the summer season in July.

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Figure 11: Retweets and Likes (M1-M23)

One of the most important indicators of the quality and creativity of content are Retweets and Likes. Figure 11 shows a significant increase in the number of Likes during the M12-M23 period compared to the first 11 months of the project – from 327 Likes to 846. It can be observed that the trend of increasing monthly Likes over time is consistent with the increasing number of monthly Tweets.





The highest number of Likes was during M16 (April 2022) and M17 (May 2022), which is in line with the increased number of project activities at that time, and therefore also Tweets. Regarding Retweets, although their average number during M12-M23 is higher in Phase 2 of

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the project compared to the M1-M11 period, there has been a decrease in recent months (Figure 12).



Figure 13: Twitter Engagement Rate (M1-M23)

Twitter engagement rate is a percentage representation of tweets' engagement divided by the number of tweets' impressions. Figure 13 represents a significant increase in the engagement rate during the first two years of the project, which means that we are on a good path to a high level of Twitter visibility.



Figure 14: Twitter Engagement Rate (M12-M23)

As presented in the past deliverables, the M36 target for engagement rate is >1%. During the M12-M23 period, this number was exceeded every month (Figure 14). Our aim is to maintain

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these percentages over 1.5% in the following period as well (i.e. until the end of project implementation).



Figure 15: @FlexiGroBots Followers' evolution (M1-M23)

Since the beginning of the project, the number of followers on the FlexiGroBots Twitter profile has steadily increased every month, reaching 231 followers at the end of November 2022 (Figure 15). Considering the success of this KPI, it is expected to reach the target number of followers set for the end of the project – 300 followers.



Figure 16: Twitter Impressions (M1-M23)

Finally, impressions mean the number of times FlexiGroBots tweets were seen. During the M12-M23 period, the number of impressions was 36 974, which is a total of 70 554 impressions achieved from M1 to M23 (Figure 16).

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Figure 17: Twitter Impressions (M12-M23)

Despite the decrease in numbers over the past months, tweets reach the expected 1 800 impressions per month, with the exception of M23 (Figure 17). Therefore, in a few months we expect to reach 100 000 impressions, which is the target number of impressions set for M36. In summary, all expected targets set for Year 2 of the project have been achieved. Therefore,

project activity and visibility on Twitter can be evaluated as successful, although some improvement measures can be taken in order to increase the number of Retweets and Impressions.

2.1.2.2 LinkedIn

Created as a company page, the FlexiGroBots account on LinkedIn (Figure 18) is an important element of project communication strategy because it is used to share and highlight the most important project-related activities on the internet's largest professional network.

As with the Twitter account, in the case of the LinkedIn page we also continued the practice established during the first year of the project that proved effective:

- Using original and creative visuals & banners, interesting emojis, as well as relevant hashtags;
- Posting relevant content to engage and inform our target audience about project progress such as blog posts, press releases, newsletters, scientific publications, deliverables, testing within Pilots, etc.;
- Redirecting traffic to the FlexiGroBots website;
- Using Analytics on LinkedIn to monitor posts and defining which content type works more efficiently.

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|--|---|--|
| FlexiGroBots Flexible robots for intelligent automation of precision Research Services - Madrid - 404 followers Following Learn more & More | on agriculture operations | |
| Home About Posts Jobs People | Videos | |
| About FlexiGroBots envisions a platform for flexible heterogeneou, precision agriculture operations providing multiple benefits using the same robots for different observation and interve | is multi-robot systems for int s for farmers around the work intion tasks, in different missi | elligent automation of d. such as: - more versatility by ons, throughout th see more |
| See all | details | |
| Page posts | | |
| ■ | FlexiGroBots 404 followers 1w • ① | |
| Want to know more about how we will enable effective use of #AI, #Robotics and othersee more | C Learn more about the #DataSpace and #DataM | #IDS-compliant agricultural larketplace in thesee more |

Figure 18: FlexiGroBots LinkedIn Page

As emphasised in the previous deliverable, in Phase 2 of project communication strategy FlexiGroBots strengthened its thought leadership on different topics covered by the project through blog posts and using its LinkedIn page as a secondary channel for promoting content and increasing impact.

When it comes to metrics, data for LinkedIn-related KPIs (visitors, followers, organic impressions and reactions) were collected using LinkedIn Analytics and shown in the following figures.



Figure 19: LinkedIn Visitors (M1-M23)

The FlexiGroBots LinkedIn page had a total of 456 visitors during M12-M23, totalling 957 visitors from the beginning of the project until the end of November 2022 (Figure 19). The

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target number of visits for Year 2 of the project was 1000, however, since this report did not include data for M24 (December 2022) we predict reaching the target number by the end of the year.



Figure 20: LinkedIn Visitors (M12-M23)

As in the case of Likes on Twitter, the highest number of Visitors was during M16 (April 2022) and M17 (May 2022), which is in line with the increased number of project activities at that time. The month with the lowest number of visits corresponds to January (M13) when the frequency of posts decreased due to the winter holidays (Figure 20).



Figure 21: LinkedIn Organic Impressions (M1-M23)

The LinkedIn organic impressions represent the number of times unpaid content is shown to LinkedIn members. This parameter is one of the most important for showing that the content actually increases the visibility of the project. With 35 385 organic impressions during the M12-M23 period and a total of 46 629 achieved during the first two years of the project, the

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impressions exceed the target number expected by the end of the project, which was set at 20 000 in the previous deliverable (D7.10). Figure 21 shows a significant increase in LinkedIn organic impressions of 214.7% during the M12-M23 period compared to the first 11 months of the project, which correlates with increased project activity during the second year of implementation.



Figure 22: LinkedIn Organic Impressions (M12-M23)

The largest number of organic impressions was recorded during M20 (August 2022), which is expected considering that Pilots field tests were taking place at that time. Also, this coincided with the publishing of the 2nd official press release. Like with visitor metrics, the lowest number of impressions corresponds to January (M13) when the frequency of posts decreased due to the winter holidays (Figure 22).



Figure 23: LinkedIn Reactions (M1-M23)

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Figure 23 shows a significant increase in the LinkedIn average reactions (engagement) rate during the M12-M23 period compared to the M1-M11 period – from 4% to 9.83%. These data imply that the content shared has been well received by users, as well as that we exceeded the target expected for the second year of the project (1.2%).



Figure 24: LinkedIn Reactions (M12-M23)

The highest percentage of reactions was recorded during the M18-M20 period (June-August 2022), which is expected considering that the 4th General Assembly and Pilots field tests were taking place at that time. Additionally, during that period, the 3rd Newsletter and 2nd official press release were published. In line with visitors and organic impressions, the lowest percentage of reactions corresponds to January (M13) (Figure 24).



Figure 25: LinkedIn Followers (M1-M23)

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Finally, the number of followers has been constantly increasing, reaching 397 followers by M23 (Figure 25). The target of this KPI, which was set in 7.10 to be reached by the end of the project (300 followers), has already been exceeded.

In summary, all expected targets set for the second year of the project have been achieved, except for Visitors. Therefore, the performance on LinkedIn can be evaluated as successful but some improvement measures should be taken in order to increase the number of Visitors and reach more key stakeholders.

2.1.3 Communication Material

The communication task (T7.2) takes care of the creation of content and marketing materials intended to increase the visibility of FlexiGroBots by promoting the project at virtual and inperson events. In addition to the marketing material that was created during the first 11 months of the project and described in D7.10, such as Branding, Dissemination & Communication Guidelines, Virtual Backgrounds, Press Release Template, PPT Template and Social Media Banners, the material created in the reporting period (M12-M23) includes:

- FlexiGroBots Brochure
- FlexiGroBots Poster
- FlexiGroBots Project Video
- New Social Media Banners
- New Banners for Blogs
- New Newsletter Template

The mentioned materials are shown in the following Figures (26-31).

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Figure 26: FlexiGroBots Brochure



Figure 27: FlexiGroBots Poster

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Figure 28: FlexiGroBots Project Video



Figure 29: New Social Media Banners

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Figure 30: New Banners for Blogs

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Figure 31: New Newsletter Template – cover page and last page

Most of the communication material was created by ATOS as the previous leader of T7.2 and a partner that is still a major contributor to this task. However, in some situations, partners design their own material according to the FlexiGroBots guidelines that were shared with them (Figure 32).



Figure 32: FlexiGroBots digital flyer designed by IDSA

By the end of the project, i.e. during Phase 3 of the communication strategy, the production of another FlexiGroBots Platform-related poster and brochure, as well as infographics for each of the Pilots, is planned.

All of the marketing materials aim to inform target audiences about the main ambition of the project, expected outcomes and the value the project provides to the three scenarios where the FlexiGroBots Platform and use of heterogeneous robots will be validated.

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2.1.4 Media & PR Strategy

The production of press releases and their promotion on the project, as well as on partner websites and social media pages, proved to be an effective way to increase the interest of the target audience in the FlexiGroBots project. Also, issuing press releases to local media by consortium partners leads to high visibility on various media outlets.

In addition to the FlexiGroBots first official published press release, which was described in detail in the previous deliverable, CSIC issued a <u>press release</u> entitled "Robots for the grape harvest, cameras to monitor nuclear fuel and photons to treat cancer: CSIC prototypes at the Transfiere Forum" regarding their participation in the Transfiere Forum on February 16 and 17, 2022 and presentation of new prototypes, including Robert (Robot for collaborative manual harvesting) developed within the framework of the FlexiGroBots. Media coverage mainly comes from publication on digital media outlets, hence, CSIC has five publications on digital media (four in Spanish, one in English) which account for a total estimated audience reached of 8 693 070, when taking into consideration each media's Monthly Unique Visitors.

Also, BIO as the leader of T7.2 prepared the <u>FlexiGroBots second official press release</u>, which was published on the project website on August 9, 2022 (Figure 33). The content entitled "FlexiGroBots is successfully building an innovative platform to help farmers" was shared with all consortium partners along with instructions for publication within their channels and social media posts.

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Figure 33: FlexiGroBots second official press release

Media coverage mainly comes from the publication on partners' websites and social media pages, as well as on digital media outlets. Three publications related to the press release were made at partners' and external websites (one in Spanish, one in English, one in Finnish) which account for a total estimated audience reached of 40 320, when taking into consideration each website's Monthly Unique Visitors. During the M12-M23 period, mentions of FlexiGroBots were recorded at the websites of two EU H2020-funded projects – Robotics4EU's and TechEthos's websites, regarding the joining of FlexiGroBots to a cluster of projects addressing ethical challenges of emerging technologies.

Most of the media coverage comes from the publication of information about FlexiGroBots on digital media outlets, hence, in total, we have 16 publications on digital media with a total audience reached of 4 120 830. The majority of the publications are in Serbian since BIO, as T7.2 leader, has been promoting communication activities and therefore engaged with the local press. Moreover, we managed to reach some news outlets in English as well. In addition to the publications on digital media concerning the press release, it is important to mention the interview for Horizon Magazine in which Francisco Javier Nieto de Santos, the project coordinator, presented the FlexiGroBots project (total audience reached is 17 198 550).

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In the coming period we aim to achieve a higher number of media publications to increase awareness primarily regarding the Pilots, although we will focus on more technology-related media to share the features of the FlexiGroBots Platform.

Another type of media covering project news is radio. Sergio Álvarez from Seresco, leader of Pilot 1 (Grapevines), participated in one radio interview with a Spanish local radio station in order to present the objectives of the project. The audience reached through that interview accounts for 669 480.

Additionally, FlexiGroBots project has been featured in two printed publications in local newspapers in Serbia, with Serbian being the main language of these publications. The following Figures (34, 35) show the publications:



Figure 34: Printed publication – Politika

ИНСТИТУТ "БИОСЕНС" ИЗ НОВОГ САДА И КОМПАНИЈА "ЗЕЛЕНИ ХИТ" РАЗВИЈАЈУ МОДЕРАН СИСТЕМ ЗА ДИГИТАЛНО ВОЂЕЊЕ ПРОИЗВОДЊЕ

обот I ари повећава принос боровни ойе йлашформа се Шренушно Шеси а v Шйанији. Финс Пишванији и



Figure 35: Printed publication – Večernje novosti

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Finally, in total there were four TV interviews about FlexiGroBots on TV networks in Serbia and Spain, which are shown in the following Figures (36-39):



Figure 36: TV interview – B92 https://youtu.be/ulw0WITxGco



Figure 37: TV interview – AgroTV Srbija https://youtu.be/KeL8FBaEdmE



Figure 38: TV interview – RTS https://youtu.be/ZpzZM7biHXI

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Figure 39: TV interview – RTVE <u>https://www.rtve.es/play/videos/noticias-andalucia/foro-transfiere-celebra-</u> <u>malaga/6378836/</u>

Tables 7-12 included in Annexes show all FlexiGroBots publications in digital media outlets, partners' and external websites and in print media, as well as TV, radio interviews and social media posts – external accounts from the M12-M23 period. Titles in other languages are presented in English for a better understanding of reviewers.

2.1.5 Newsletter

FlexiGroBots biannual Newsletter presents an overview of updates on the project progress. Graphic template in .pdf format is uploaded to the website, while subscribers receive it via emailing. This informative communication material targets relevant audiences interested in the project and, eventually, potential end-users who can adopt technologies and the services developed within the FlexiGroBots platform.

As described in the previous deliverable, emailing of Newsletter and other relevant communications is powered by MailChimp, a leading email marketing tool that provides reliable metrics on the number of clicks throughout the template, the number of people who opened it, etc. The current number of subscribers on MailChimp is 34.

FlexiGroBots second Newsletter was sent in January 2022 to 28 recipients through MailChimp. The Open Rate of Newsletter was 57.1% with 51 Total Opens. The content of the Newsletter is shown in Figure 40. Structure for each issue contains general updates on the WPs progress, news & events and presentation of partners. Additionally, the newsletter was highly promoted on FlexiGroBots social media accounts.

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Figure 40: FlexiGroBots 2nd Newsletter – Content page

FlexiGroBots third Newsletter was prepared in June 2022. It was published on the website and promoted on social media, however, it was not sent through MailChimp due to certain technical problems. The next issue is planned for January 2023, and then both issues will be sent to subscribers.

2.1.6 Events & Workshops

During the M12-M23 period of the project, FlexiGroBots consortium partners have participated in different online and in-person events in order to present the results of their research, network and give visibility to the project. All of the events were promoted on social media accounts. Some of them are available on the website, and some are in the process of being uploaded. For several events we have also uploaded the recordings of online sessions to our YouTube channel or Videos section on the website.

Table 2 shows the list of attended events together with a short description of the participation type:

| Event Name | Date | Description | Audience Type | Estimated audience |
|---|------------|--|------------------|-----------------------|
| SmartFarming pellolla, navetassa ja kukkarossa - | 01/12/2021 | Mikko Hakojärvi from MTE presented FlexiGroBots activities in the crop production dedicated session. | | 300 |

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| Event Name | Date | Description | Audience Type | Estimated audience |
|--|-------------------|--|------------------|-----------------------|
| <u>virtuaalitapaht</u> <u>uma</u> | | | | |
| Transfiere: <u>11º European</u> <u>Meeting on</u> <u>Science,</u> <u>Technology</u> and Innovation | 16- 17/02/2022 | -CSIC booth (E11) features prototypes including Robert (Robot for collaborative manual harvesting) -Panel: Sustainability as a strategic element in organizations - Angela Ribeiro -Elevator Pitch session by CSIC - Angela Ribeiro | | |
| CAPIGI Webinar "When will spray drones lift off?" | 22/02/2022 | Jere Kaivosoja, Senior Scientist from Natural Resources Institute Finland (LUKE) participated as a speaker. | | |
| European future in the sector of berry fruits and new digital technologies event | 25/02/2022 | Project event organised by Zeleni hit. Prof. Dr. Nebojša Momirović and M.Sc. Igor Vasiljević from Zeleni hit gave lectures, as well as Dr. Oskar Marko from BIO. | Industry | 100 |
| First conference of the berry fruits agrobusiness sector | 04/03/2022 | Project event organised by BIO and Zeleni hit in the Hotel Jugoslavija, Belgrade. Lectures were given by M.Sc. Nevena Momirović and Prof. Dr. Nebojša Momirović from Zeleni hit, as well as by Prof. Dr. Vladimir Crnojević and Dr. Oskar Marko from BIO. | Research | 300 |
| TechEthos Cluster of EU- funded projects Kick-off Meeting | 04/03/2022 | KoM of TechEthos, a new EU-funded project that deals with the ethics of new and emerging technologies anticipated to have high socio- economic impact. Moritz Laurer from CEPS described FlexiGroBots objectives, main outcome and ethics components during a 5-min presentations. | | |

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| Event Name | Date | Description | Audience Type | Estimated audience |
|--|----------------------|---|------------------|-----------------------|
| Robotics4EU and AgriFood Lithuania DIH workshop: "Perceptions and social acceptance of robotics in AgriFood" | 28/04/2022 | Members of the FlexiGroBots project, Dr. Artur Bogucki from the Centre for European Policy Studies (CEPS) and Dr. Oskar Marko from the BioSense Institute, were speakers at the online workshop on non-technological challenges of robotics in the agri-food sector. | | |
| First in-person TechEthos cluster meeting | 23/05/2022 | TechEthos EU-funded projects cluster on emerging tech gathered in person for the first time since its creation in 2021. The ethical challenges of the FlexiGroBots project were presented by Dr. Artur Bogucki from the Centre for European Policy Studies (CEPS). | | |
| Robotics4EU and AgriFood Lithuania DIH workshop: "Policy issues in agri-food robotics" | 25/05/2022 | FlexiGroBots project was represented by Dr. Artur Bogucki from the Centre for European Policy Studies (CEPS), who was talking about digital policy in precision agriculture. | | |
| <u>Hannover</u> <u>Messe 2022</u> | 30/05- 02/06/2022 | The FlexiGroBots project was presented at HM22 by the IDSA at Hall 5, Booth A17. Arian Firouzbakhsh, Senior Solution Architect at IDSA, was at the booth to answer questions about FlexiGroBots. | | |
| Agricultural and Food Science days 2022 (MTP2022) | 14- 15/06/2022 | Jere Kaivosoja from LUKE gives a presentation on "Piloting of flexible platforms for field robotics". | Research | 500 |

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| Event Name | Date | Description | Audience Type | Estimated audience |
|---|----------------------|---|---|-----------------------|
| <u>Farmari</u> | 30/06- 02/07/2022 | Mikko Hakojärvi presented FlexiGroBots activities for interested customers at Mtech DIgital Solutions booth. | Research Industry Civil Society General public Policy makers Media Investors Customer s Other | 59 000 |
| <u>NEFERTITI</u> | 06- 08/07/2022 | Mikko Hakojärvi presented FlexiGroBots activities for NEFERTITI project members participating to CrossVisit in Finland. | Research Industry Policy makers Media Customer s | 32 |
| <u>Peltopäivä</u> 2022 | 16/08/2022 | Field exhibition day was an open day at Luke Ruukki state, organized jointly by Luke and Baltic Sea Action Groub (BSAG). Carbon management and ongoing research at Luke were the core of the exhibition. VTT and PRO also participated. | | 350 |
| <u>Nivala Farm</u> <u>Exhibition</u> 2022 | 19- 20/08/2022 | Nivala Farm Exhibition is the largest farm exhibition in Northern Finland, where 130 exhibitors widely from the sector were presenting their farming related actions. LUKE was participating. | | 12 500 |
| IEEE RO-MAN 2022 | 29/08- 02/09/2022 | CEPS participated in the IEEE RO-MAN 2022 conference in Naples a leading robot & human interactive communication European conference, where Moritz Laurer and Artur Bogucki presented CEPS' research on model | | |

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| Event Name | Date | Description | Audience Type | Estimated audience |
|---|-------------------|--|----------------------|--------------------|
| | | cards and datasheets reporting standards for models and datasets. A summary of this research will be published as a paper in a special issue from the IEEE RO-MAN 2022 conference. | | |
| Inno Panorama 2022 | 22- 24/09/2022 | ART and AFL had a booth there and presented the project/activities/ technologies and discussed with attendees about them, introduced them and trying to understand their perspective on potential use of these technologies. Also, AGS had a booth where presented the project (general scope, objectives, ongoing and further activities, etc.). | | 1 000 |
| <u>IPPS 2022</u> | 27- 30/09/2022 | Mar Ariza-Sentís from WU was presenting some work done inside the scope of the FlexiGroBots project to the International Plant Phenotyping Symposium, carried out in Wageningen. | Research Industry | 80 |
| Viral Project | 29/09/2022 | Sergio Vélez and Mar Ariza-Sentís from WU presented the FlexiGroBots project to the Viral project members. | Research Industry | 50 |
| Fruit Attraction | 04- 06/10/2022 | The CSIC team has shown the prototype of a manual harvesting assistance robot that collaborates with an operator by following him during harvesting and autonomously transporting the box in which he/she places the harvested product. They also presented the latest developments in autonomous land vehicles aimed at the early detection of pests and their precision treatment. | | 400 |
| Fruit Attraction / autonomous robot teams. | 05/10/2022 | The latest developments in robot fleets are presented by Ángela Ribeiro, in which both aerial vehicles and ground vehicles, both unmanned, collaborate in the early detection of pests and their | Industry | 20 |

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| Event Name | Date | Description | Audience Type | Estimated audience |
|--|-------------------|--|------------------|-----------------------|
| Agriculture 5.0 is coming | | precision treatment. There will also be a prototype of a manual harvesting aid robot that collaborates with an operator, following him during the harvest and autonomously transporting the box in which he deposits the harvested product. | | |
| <u>Agricultural</u> <u>machinery</u> <u>trade fair</u> | 13- 15/10/2022 | Luke and Probot presented FlexiGroBots at Innovation Market in Maatalouskonemessut (Agricultural machinery trade fair), where they had their own stand. In addition, they had daily interviews/pitches at the stage. Also, Mikko Hakojärvi presented FlexiGroBots activities for interested customers in Mtech Digital Solutions booth. | | 15 000 |
| <u>23rd IBIS</u> seminar | 20- 21/10/2022 | Among other things, Dr. Damir Krkljes from BIO talked about the FlexiGroBots project and the robot Gari. Also, he showed a short film about robot positioning. | Industry | 200 |
| <u>Digital Farm</u> 2022 | 15/11/2022 | AFL presented the FlexiGroBots project (general scope, objectives, ongoing and upcoming activities of the project, etc.). | | 2 200 |
| IDSA Ecosystem Building – online exhibition | 21/11/2022 | ATOS and IDSA have deployed a Data Space using Kubernetes technology, which allows deploying DataSpaces in production environments easily. | | 35 |
| SmAgTech EXPO 2022 | 24/11/2022 | Mar Ariza-Sentís and Sergio Vélez from WU presented "Drones for precision agriculture: using remote sensing to help farmers and winegrowers to manage the spatial variability within vineyards", where half the presentation was regarding the FlexiGroBots project. | | |

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| Event Name | Date | Description | Audience Type | Estimated audience |
|---|----------------------|---|------------------|-----------------------|
| <u>ROBOT2022</u> | 23- 25/11/2022 | A project event was being organised during the ROBOT2022 conference in a special session created for FlexiGroBots called Versatile and Heterogeneous Robots in Agriculture. WU, LUKE, ATOS, VTT BIO, CSIC participated. | | |
| <u>AGROMEK</u> | 29/11- 02/12/2022 | Two FlexiGroBots presentations held by Ari Ronkainen and Annimari Hartikainen. | | |
| IEEE/ASME MESA 2022 | 29/11/2022 | VTT (Tapio Heikkilä) gave a keynote: Collaborative Robotics – Past, Present and Future. VTT conference paper was also presented. | Research | 80 |
| The XX CIGR World Congress 2022. (International Commission of Agricultural and Biosystems Engineering) | 05- 10/12/2022 | FlexiGroBots presentation considering spraying drone regulations, presented by Ari Ronkainen from LUKE. | | |

 Table 2: FlexiGroBots – Participation in events – Year 2

From all the events attended, the communication task has made the following categorization:

- Industrial exhibitions:
 - o Transfiere 2022
 - Fruit Attraction
 - Hannover Messe 2022
 - Nivala Farm Exhibition 2022
 - Peltopäivä (Field exhibition day) 2022
 - o Inno Panorama 2022
 - Agricultural machinery trade fair
 - o Farmari
- Industrial conferences:
 - First conference of the berry fruits agrobusiness sector
 - **ROBOT2022**

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- SmAgTech EXPO 2022
- Digital Farm 2022
- o IEEE RO-MAN 2022
- o 23rd IBIS seminar

As announced in the previous deliverable, three Project events were organised during the second year of the project:

- First conference of the berry fruits agrobusiness sector
- European future in the sector of berry fruits event
- Special session entitled "Versatile and heterogeneous robots in agriculture" within ROBOT2022 conference

2.2 Communication Key Performance Indicators (KPIs)

During the second year of the project, communication activities were successfully done in accordance with the plan presented in D7.2 and D7.10.

Table 3 presents all the metrics obtained until M23 of the project implementation, as well as the target set by M36.

| Туре | КРІ | Target by M36 | Achieved until November 2022 (M23) |
|----------|--|------------------|---------------------------------------|
| Website | Unique Visitors | 6 000 | 12 021 |
| | Sessions | 8 000 | 13 024 |
| | Page Views | 12 000 | 18 768 |
| | Number of References to the project on the search engine (Link building) | 50 | 736 |
| Twitter | Tweets | 360 | 318 |
| | Retweets/Likes | 800 | 1 747 |
| | Followers | 300 | 231 |
| | Engagement rate | >1% | 3.32% |
| | Impressions | 100 000 | 70 554 |
| LinkedIn | Visitors | 1 500 | 957 |
| | Reactions | 1.2% | 7.17% |
| | Organic Impressions | 20 000 | 46 629 |

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| Туре | КРІ | Target by M36 | Achieved until November 2022 (M23) |
|-----------|------------------------------------|------------------|--|
| | Followers | 300 | 397 |
| YouTube | Followers | 30 | 21 |
| Marketing | Infographics | 3 | 0 |
| Material | Project Poster | 2 | 1 |
| | Videos | 1 | 1 |
| | Brochures | 2 | 1 |
| | Press Releases | 2 | 2 |
| | Audience reached by Press Releases | 1 500 | +13 000 000 |
| | Newsletters | 6 | 4 (4 ⁺ issue will be published in January 2023) |
| Events | Industrial conferences | 3 | 10 |
| | Industrial Exhibitions | 1 | 11 |
| | Audience reached | 1 000 | 102 470 |

Table 3: FlexiGroBots Communication KPIs until M36

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3 Dissemination Strategy

3.1 Dissemination Reporting M12-M23

During this second year of the project all FlexiGroBots partners have contributed to successfully achieve the KPIs set by Month 23, November 2022. Except for the Scientific publications and policies briefs, explained in Section 3.1.3, the rest of the dissemination activities have reached the target by M23, and in many cases, for instance conferences and exhibitions, even doubling the activities that have been registered.

| Dissemination activity | Target by December 2022 (M24) | Achieved until December 2022 (M24) |
|--|----------------------------------|---------------------------------------|
| Organization of projects events | 1 | 3 |
| Participation in scientific conferences/workshops | 5 | 15 |
| Participation in general public conferences/workshops/webinars | 5 | 15 |
| Scientific publications, policies briefs | 5 | 1 (3 manuscripts under review) |
| Demonstrations and Exhibitions | 3 | 9 |
| Industry events (Pitch + Trade fair + Other) | 10 | 12 |
| Synergies with projects and network | 5 | 27 |
| Public datasets, Open-source code | 4 | 5 |

 Table 4: Dissemination KPIs targeted until M23 and KPIs achieved

3.1.1 Organisation of project events

During this second year, the FlexiGroBots partners have focused on organizing project events to disseminate the importance of the project over the industry and research communities.

There have been in total 3 project events, two from which organized by Zeleni Hit and one organized by Wageningen University and CSIC during the ROBOT2022 conference with the special session called "Versatile and Heterogeneos Robots in Agriculture", with the conference papers from WU, CSIC, LUKE, VTT, BIO, and ATOS.

The KPI of the whole project (until M36) regarding organization of project events have already been achieved by M24.

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Figure 41: Planned timeline of the dissemination activities of the FlexiGroBots project during the three years of the project.

3.1.2 Conferences and workshops

During this second year of the project, FlexiGroBots has taken part of 13 conferences and 2 workshops. As it can be seen in Table 4, the KPI for conferences and workshops has not only been reached but also doubled. Hence, FlexiGroBots partners are doing a good job spreading and promoting the work done by all professionals.

Opposite to a year ago, when all the conferences and workshops were online, 12 out of the 15 conferences and workshops attended this year have been presential and one hybrid event, which boosts networking while participating to conference's events.







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Figure 42: Conferences and workshops attended during 2022.

The conference plan for 2023 is to present our work at international conferences, such as ICRA 2023, ECPA 2023, IGARSS 2023, IROS 2023, RSS 2023, among others that will be chosen during the upcoming months.



Figure 43: Potential conferences targeted for 2023.

3.1.3 Scientific publications / policy briefs

Scientific publications are the unique KPI that still has not been reached by M24. Until the moment, one publication by Wageningen University, called "Mapping the spatial variability of Botrytis bunch rot risk in vineyards using UAV multispectral imagery" [2] has been published in the European Journal of Agronomy.

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Nevertheless, there are currently five manuscripts under review, one in the journal SoftwareX, one in the journal Computers and Electronics in Agriculture, one in the Precision Agriculture journal and two more in the journal Data in Brief.



Figure 44: Scientific journals in which the manuscripts are already published or under review.

In 2023, the plan is to send 15 journal articles, 13 conference papers and 1 book chapter to have them published and reach the KPIs by the end of the FlexiGroBots project. It is also planned to visit other non-scientific events such as Findrones2023, Sarka-messut, Okramaatalousnäyttely, KoneAgria and the Second conference of the berry fruits agrobusiness sector.



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Figure 45: Some scientific journals in which we plan to publish articles during 2023.

The full list of scientific publications planned for the following period is given in Table 5.

| Institution | WP/Pilot | Type of publication | Planned topic | Planned journal/conference |
|-------------|-----------------|---------------------|---|---|
| BIO | WP3/ Pilot 3 | Journal article | Detection of blueberry rows, weeds and diseases in UAV images | Computers and Electronics in Agriculture |
| BIO | Pilot 3 | Journal article | Precise positioning and blueberry tree detection | Computers and Electronics in Agriculture |
| BIO | WP3/ Pilot 3 | Journal article | Vehicle routing and positioning in blueberry orchards | PLOS ONE |
| BIO | Pilot 3 | Journal article | Multi-task UGV robot for blueberry orchards | Computers and Electronics in Agriculture |
| BIO | Pilot 3 | Journal article | Low-volume precision weed spraying robotic system for blueberry orchards | Precision Agriculture |
| BIO | WP3/ Pilot 3 | Conference paper | Object detection in blueberry orchard | BMVC 2023 |
| BIO | Pilot 3 | Conference paper | Correction of uneven illumination in UAV images caused by the presence of clouds during acquisition | ICCV 2023 |

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| Institution | WP/Pilot | Type of publication | Planned topic | Planned journal/conference | |
|-------------|-------------|---------------------|--|---|--|
| BIO | Pilot 3 | Conference paper | Precise estimation of locations for soil sampling based of UAV image | EUSIPCO 2023 | |
| WU | Pilot 1 | Journal article | Early extraction of grape phenotyping traits from UAV RGB videos using instance segmentation | Computers and Electronics in Agriculture | |
| WU | Pilot 1 | Conference paper | Open-source dataset on vineyard UAV imagery | ECPA2023 | |
| WU | Pilot 1 | Conference paper | Real-time assessment of spatial variability in vineyards using UAV images | IGARSS 2023 | |
| WU | Pilot 1 | Conference paper | Grape counting in RGB videos – comparing two instance segmentation models | ECPA2023 | |
| WU | Pilot 1 | Conference paper | LIDAR and Multispectral 3D data fusion for identifying fungal disease traits in vineyards | ECPA2023 | |
| WU | Pilot 1 | Conference paper | Automatic detection of woody crop diseases combining aerial-ground robots and network sensors: An upscaling remote sensing approach | ECPA2023 | |
| LUKE | Pilot 1,2,3 | Journal article | Piloting different drone missions in farm robotics development | Springer Remote Sensing/Photogrammetry | |
| LUKE | Pilot 2 | Journal article | Framework for drone based field operations in arable farming | Springer Remote Sensing/Photogrammetry | |
| LUKE/VTT | Pilot 2 | Journal article | Mission control with tractor robotics | Computers and Electronics in Agriculture | |
| LUKE | Pilot 2 | Journal article | Dataset on close range UAV images of rapeseed pests | Data in Brief | |

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| Institution | WP/Pilot | Type of publication | Planned topic | Planned journal/conference | |
|------------------|----------|---------------------|---|---|--|
| VTT + others | WP3 | Journal article | МСС | TBD | |
| VTT + others | Pilot2 | Conference paper | Pilot 2 data space | TBD | |
| CSIC | Pilot 1 | Conference paper | Collaborative Smart- Robot for Yield Mapping and Harvesting Assistance | ECPA2023 | |
| CSIC | Pilot 1 | Conference paper | Detection of damaged white grape bunches | ECPA2023 | |
| CSIC | Pilot 1 | Conference paper | Small robot for localized spraying using ISOBUS protocol | ECPA2023 | |
| CSIC | Pilot 1 | Journal article | Reconstruction of the vineyard's architecture from UGV images. | TBD | |
| CSIC | Pilot 1 | Journal article | Early Botrytis detection with Evolutionary deep learning | TBD | |
| CSIC | Pilot 1 | Journal article | How to turn an electric car into a crop inspection vehicle | Computer in | |
| CSIC | Pilot 1 | Book chapter | Automation in Agricultura | Springer Nature: Encyclopedia of Smart Agriculture Technologies | |
| ATOS + others | WP3 | Journal article | Autonomous multi-robot management platform for precision agriculture | Sensors: Circular Economy and Digital Technologies in Agriculture | |
| ATOS + others | WP3 | Conference paper | FlexiGroBots' autonomous multi-robot management platform for precision agriculture | 26 th European Conference on Artificial Intelligence ECAI 2023 | |

Table 5: List of planned scientific publications by the end of the project

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3.1.4 Demonstrations and exhibitions

During 2022, FlexiGroBots has participated in six exhibitions, all presential except one. The participation has mostly been from Pilot 3 (LUKE and MTE).

In most of the exhibitions, 4 out of 6, these were two or three-day events, that took place all around Finland and also in Lithuania and online.

Thanks to the participation to many exhibitions, the KPI of 2022 has been reached and doubled. For the last year of the project, we are planning on participating and even organizing more exhibitions to boost the presence of FlexiGroBots and reach different targets than the scientific community, achieved with scientific publications and conferences.



Figure 46: Exhibitions in which FlexiGroBots has participated in 2022.

In 2023 there are planned participations in Sarka-messut, Okra-maatalousnäyttely and KoneAgria exhibitions, among others.

3.1.5 Industry events

Industry events, such as fare trades and pitches are very important to dissemination the work done by FlexiGroBots to field experts. During 2022, FlexiGroBots has participated to 6 industry events, reaching the targeted KPI for M24. They happened during the whole year, starting on February with the organization of the event called "European future in sector of berry fruits and new digital technologies", by ZEL, until the end of October, with the participation to the 23rd IBIS Seminar, by BIO.

For the next year, we plan to continue with the same strategy to reach the maximum number of field experts.

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Figure 47: Industry events in which FlexiGroBots participated in 2022.

3.1.6 Synergies with projects and network

During the second year of the project, synergies with projects and network have doubled with respect to December 2021.

Wageningen University has continued the synergy with the Scorpion-H2020 project and also with the Institute for Systems and Computer Engineering, Technology and Science of Portugal. Moreover, WU has generated two new synergies, first with AgROBOfood, which is a European ecosystem for the effective adoption of robotics technologies in the European agri-food sector, and also with the VIRAL project.

ATOS has synergies with several H2020 projects, such as EO4AGRI, GRAPEVINE, CoRoSect, AI4EU, DEMETER, OPEN DEI, DIH4AI and IoTNGIN. Moreover, ATOS continued being part of BDVA-DAIRO and OGC.

VTT has continued the collaboration with Finnish IDS Hub, Finnish GAIA-X Hub and Finnish GAIA-X Agriculture data space working group. Moreover, they are working together with the <u>EU Reservist</u> and <u>KITT4SME</u> projects. Lastly, they kept sharing knowledge with the Finnish InDEx programme.

LUKE also maintained the synergies with SmartAgriHubs, Agricultural Automation of Finland, Finnish UAV ecosystem and the Forum for Intelligent Machines.

MTE has continued working together with the <u>AFarCloud</u> project.

CEPS has synergies with Data Science in Policy Network, for which it is a founding member and with TechEthos.

Additionally, in order to increase project communication/dissemination & exploitation activities, we plan to participate in the European Robotic Forum (ERF) 2023, as well as to establish collaborations with several Digital Innovation Hubs (DIHs) listed in section 6.2 within FlexiGroBots deliverable D7.3 who can offer various communication and dissemination services by organizing e.g. testing or trainings.

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Figure 48: FlexiGroBots Synergies with other projects and network during 2022.

3.1.7 Public datasets, open-source code

Public datasets are very relevant for the scientific community to promote reproducibility and stimulate transparency during the research that has been carried out.

Hence, FlexiGroBots has already published 5 open-source datasets, at least one from each pilot of the project. Four of the datasets are available on Zenodo and the other one is available at the institutional repository of CSIC.

The datasets contain a great variety of formats and data, such as UAV RGB videos and UGV images with labels for object detection and tracking; raw images as extracted by the UAV, and hyperspectral data collected by UA.





Figure 49: Public repositories in which FlexiGroBots open-source datasets are published.

3.2 Dissemination Key Performance Indicators (KPIs)

Table 6 provides insights of the targeted KPIs by the end of the project for each type of dissemination activity along with the KPIs already achieved by M24. In 4 out of 7 targets, the

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| Dissemination activity | Target by M36 | Achieved until December 2022 (M24) | | |
|--|---------------|--|--|--|
| Organization of projects events | 3 | 3 | | |
| Participation in scientific conferences | 10 | 15 (13 in preparation for 2023) | | |
| Participation in general public conferences/workshops/webinars | 10 | 15 | | |
| Scientific publications, policies briefs | 10 | 1 (3 manuscripts under review, 15 in preparation for 2023) | | |
| Demonstrations and Exhibitions | 6 | 9 | | |
| Industry events | 20 | 12 | | |
| Synergies with projects and network | 10 | 27 | | |
| Public datasets, Open-source code | 6 | 5 | | |

KPIs by M36 have already been reached. However, industry events and scientific publications are still a bit behind. Hence, the dissemination work of the next year will focus on those points.

Table 6: Dissemination KPIs targeted by M36 and already reached by M24

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4 Individual Communication and Dissemination Activities

4.1 ATOS

ATOS has large expertise in communicating and disseminating results from its research projects. Through its communication and design group, Atos Research and Innovation can provide all methods and tools for effective communication. In the context of the FlexiGroBots project, ATOS is responsible for carrying out the communication strategy as the T7.2 leader, in line with the plans defined. ATOS aims at guaranteeing the maximum visibility of the project, achieving the KPIs established.

Besides the contributions done in Y1, during Y2 ATOS has contributed to the communication activities through online communications (such as in social networks, the website, blogs, etc.), exploring potential collaborations with other research projects (like with those funded under the ICT-46 call), supporting other dissemination activities of the project (e.g., presentations to stakeholders, interviews, etc.) and participating in several events.

ATOS has also promoted internally the project through internal presentations (especially in the area of data spaces development) and newsletters with information about the progress done in the project, publishing information in portals accessible for the employees.

The ATOS team will continue to look for events and opportunities to increase the visibility of the project, promoting the outcomes produced, engaging stakeholders and contributing to publications.

4.2 CEPS

CEPS participated virtually in the Kick-off meeting of the 'TechEthos Cluster – H2020 projects' on 03.04.2022. TechEthos is a new EU-funded project that deals with the ethics of new and emerging technologies anticipated to have high socio-economic impact. Moritz Laurer (CEPS) described FlexiGroBots' objectives, main outcomes and ethics components in a presentation. In the following month, the same TechEthos cluster organized their second meeting in Vienna. At this workshop CEPS, represented by Artur Bogucki, presented challenges for ethical AI application in the light of FlexiGroBots.

On 28.04.2022 CEPS participated in an online workshop 'Perceptions and social acceptance of robotics in AgriFood', where Artur Bogucki (CEPS) talked about perception as a factor in

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agricultural technology implementation. Furthermore, on 25.05.2022 CEPS participated in a Workshop on 'Policy issues in agri-food robotics' at the 'Lithuanian Davos' conference in Vilnius. Artur Bogucki (CEPS) presented on how to address precision agricultural challenges with EU digital policy.

In September 2022, CEPS participated in the IEEE RO-MAN 2022 conference in Naples a leading robot & human interactive communication European conference, where Moritz Laurer and Artur Bogucki presented CEPS' research on model cards and datasheets reporting standards for models and datasets. A summary of this research will be published as a paper in a special issue from the IEEE RO-MAN 2022 conference. Additionally, CEPS contributed a blog post to the FlexiGroBots website explaining their work on ethical and technical documentation for Machine Learning with Model Cards and Datasheets.

In March 2023, CEPS will present on the optimal agricultural data spaces in Odense, Denmark, at the special workshop for ICT-46 projects funded by the European Commission to be held at the 2023 European Robotic Forum (ERF2023). CEPS will continue to seek out high level events and publishing opportunities in the area of applied AI, data governance and robotics with a social science focus to present progress as well as output of CEPS research on FlexiGroBots ELSE factors and Ethical AI

4.3 SER

Throughout the year SERESCO has actively undertaking several dissemination activities to publicize the FlexiGroBots project and reach out to the community. These activities include regular posting of status updates on Seresco's website as well as in the Seresco's Social Media accounts on three major networks: Twitter, LinkedIn and Facebook.

Seresco also featured as contributors to the publication "Automatic detection of woody crop diseases combining aerial-ground robots and network sensors: An upscaling remote sensing approach" together with other partners such as WUR. The company has also participated in a status report titled "Pilot progress" that was published on the FlexiGroBots blog in November 2022.

During the last year of the project SERESCO plans to participate in a large dissemination event that will involve interviews in television and radio at regional or even national level. That will also involve at least a press release. The company will also keep working as usual, periodically publicizing the project's progress on the website, social media and the FlexiGroBots blog.

4.4 CSIC

Attendance at the Transfiere fair (on February 16 and 17, 2022). Transfiere, European Meeting on Science, Technology and Innovation. A key professional and multisectorial forum for the transfer of knowledge, the improvement of competitiveness in the business sector and the

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generation of business and networking opportunities. Every year in Malaga, Transfiere becomes an unmissable event for Ecosystem Agents where they can establish new B2B contacts, network, find new partners, establish strategic alliances and synergies, as well as publicise new products, services and innovative projects. The harvest assistance robot was presented.

Attendance at the Fruit Attraction fair (from October 4 to 6, 2022). Participation in the Fruit Attraction fair at the CSIC collective stand showing information on the FlexiGroBots project. A presentation was also made presenting the latest developments in robot fleets in which both aerial vehicles and ground vehicles, both unmanned, collaborate in the early detection of pests and their precision treatment. A prototype of a manual harvesting aid robot that collaborates with an operator by following him during harvesting and autonomously transporting the box in which he places the harvested product was shown.

Attendance at the Global Robot Expo fair (on November 30 and December 1, 2022). The benchmark event on industry 4.0, automation, artificial intelligence and robotics. Sixth edition of the professional event on industry 4.0, robotics and artificial intelligence in Madrid that offers the most innovative products in the sector. With an expected 15 000 attendees, the congress counts on the participation of more than 150 companies.

4.5 TER

During 2021 and 2022, Terras Gauda has actively participated in the Communication and Dissemination activities of the FlexiGroBots project.

We have organized meetings with interested parties. In 2021 we have prepared press releases that have had a very good impact not only on the specialized press, but also on the general press. Several Spanish radios have interviewed us.

In September 2021, together with our partners within Pilot 1, we prepared a demo in the Terras Gauda vineyard, as well as a press conference where we showed the media our work and development in FlexiGroBots. The incidence in national newspapers, magazines, radios and TV has been remarkable. It is planned to hold another press conference in 2023 with our colleagues and to which we will invite national media, including newspapers, magazines, radio and television, to expand communication and dissemination of the FLEXIGROBOTS project and its results.

For next year we plan to organize meetings with demonstrations with farmers, as well as press releases.

In 2022 Terras Gauda collaborate with Wageningen University & Research in an article published in the "European Journal of Agronomy" providing data on the plot where the trials were carried out.

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4.6 WU

Wageningen University (WU) is leader during the whole duration of the project of T7.1, which is the dissemination task. Therefore, WU is responsible for promoting and managing the dissemination strategy of the FlexiGroBots project.

WU has participated in all the types of dissemination activities during the second year of the project, being the most relevant the publication of a scientific article in the European Journal of Agronomy. Moreover, we currently have three publications under review.

WU has taken part of several conferences, such as IPPS2023, SmAgTech EXPO 2022, and ROBOT2022. Furthermore, for ROBOT2022, WU has organized a project event by creating a special session in which partners from the three pilots have sent conference manuscripts.

During the last year of the project, we plan to keep publishing on scientific journals such as Computers and Electronics for Agriculture. Lastly, we plan to participate in two international and high-rank conferences: ECPA2023 and IGARSS2023.

4.7 VTT

VTT dissemination and communication activities have been following:

VTT participated to Peltopäivät-event organised by LUKE 16.8.2022. The event presented the field robots and drones developed and used in pilot 2

VTT has written a conference paper: N. Känsäkoski et al, "Detection and Localizing of Rumex Seedlings for Robotic Weeding", IEEE/ASME MESA 2022 – 18th International Conference on Mechatronics, Embedded Systems and Applications, 28-30 November 2022, Taipei, Taiwan

Tapio Heikkilä, VTT gave a keynote talk on Collaborative Robotics – Past, Present, and Future in IEEE/ASME MESA 2020 2022 – 18th International Conference on Mechatronics, Embedded Systems and Applications, 28-30 November 2022, Taipei, Taiwan

We have been participating three conference papers where LUKE has been the main author.

VTT has been writing one blog articles to project web page and participated to another blog article

4.8 BIO

In the M12-M23 period of the FlexiGroBots project, BioSense Institute (BIO) was even more actively involved in communication & dissemination activities compared to the first year, considering that it took over the leadership of T7.2 (communication task) just a few months ago.

On February 25th and March 4th, Dr. Oskar Marko gave lectures at Project events organized in Serbia — "European future in sector of berry fruits and new digital technologies" and "First conference of the berry fruits agrobusiness sector", respectively. On April 28th he participated

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in the online workshop "Perceptions and social acceptance of robotics in AgriFood", which was organized by Robotics4EU and AgriFood Lithuania.

BIO hosted the 4th FlexiGroBots General Assembly, which was held in Novi Sad, Serbia on the 29th and 30th of June as a hybrid event. The results of the project were highlighted, the new agrobot Gari for automation of blueberry production was presented to partners and a visit to the Zeleni Hit d.o.o was successfully organized.

The project was presented at the 23rd IBIS seminar that took place in Silver Lake, Serbia on October 20th and 21st, as well as on the shows "Naše dobro" of AgroTV and "Naučni portal" of the Radio Television of Serbia (RTS).

In addition to collecting and editing content for the 3rd newsletter, BIO was the leading author of the 2nd official press release that was published on August 10th on the project website. After that, the press release was adapted to the Serbian language and published in 16 digital and 2 print media.

BIO participated in the ROBOT2022 conference with a paper entitled "Blueberry Row Detection Based on UAV Images for Inferring the Allowed UGV Path in the Field" and plans to publish two AI-related and two UGV-related papers in high-ranked scientific journals in the coming period, as well as participate in at least four conferences.

4.9 ART

ART has leveraged its membership in national and international networks, communities and initiatives to achieve a greater impact of the FlexiGroBots and disseminate its results during Y2. Key networks that have been engaged include EIT Food (Europe's leading food innovation initiative, supported by the EIT, a body of the EU), SmartAgriHubs (a pan-European network of agri-food Digital Innovation Hubs and Competence Centres with over 164 partners), and EDIH4IAE.LT (a consortium of leading Lithuanian innovation stakeholders and currently one of the EDIHs in Lithuania), among others. ART has, also, represented FlexiGroBots during the Digital Farm Forum on the 15th of November 2022 in Vilnius and during the InnoPanorama expo in Kaunas on 22-24th of September 2022.

4.10 LUKE

Luke's research group has been active on national events reaching farmers, advisors, politicians, related industries, and stakeholders again in 2022. These included two major exhibitions both over 10 000 visitors (Nivala Maaseutunäyttely and Maatalouskonemessut) and one smaller (Ruukki Peltopäivät) where all the robotics related to Flexigrobots Pilot 2 were presented. LUKE participated in three international conferences, where especially the pest management and spraying drone were in the focus. Among these conferences, The XX CIGR World Congress 2022 in Kyoto Japan is a core conference in Agricultural Engineering domain. The work for scientific publications is ongoing.

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In 2023, LUKE will disseminate the joint project results first in Findrones2023 seminar, where drone actions in all the Pilots are outlined. The main goal is to produce scientific publications, but the concrete demonstrations to farmers and related authors will be continued. In addition, major conferences in related topics are considered.

4.11 MTE

MTE has actively participated in domestic agricultural exhibitions during the first and second year of the project. On 14.11.-16.11.2021 at Tampere Finland during Koneagria exhibition, on 30.6.-2.7.2022 at Mikkeli during Farmari exhibition and on 13.10.-15.10.2022 at Helsinki during MaatalousKonemessut. In all events FlexiGroBots project FlexiGroBots project was represented on MTE booth to a wide audience including farming professionals, advisors, politicians, and the general public. In addition to domestic exhibitions MTE has given more indepth presentations about FlexiGroBots project and project activities to specific interest groups such as group of experts visiting Finland from NEFERTITI project.

In 2023 MTE will continue the interaction with advisors, farmers, academia and general public.

4.12 PRO

- Probot Oy introduced Flexigrobots project at a field-robot event in Ruukki, Finland in 2022-08-16. There were about 100 participants (farmers and researchers).

- LinkedIn post 2022/08/31 (likes: 84 Organic Views: 1.670)

4.13 IDSA

IDSA contributed to the communication and dissemination of the project activities in multiple ways:

-Presented the project in the IDSA booth at the Hannover Messe Exhibition (in May/June 2022)

-Published two blog posts describing how the project uses IDS standards, and how data sharing via the use of IDS standards can contribute to the creation of greater value in agriculture industry. Both were shared with IDSA community.

-The project's implementation of IDS Testbed was shared with the IDSA's open source community, also to provide further visibility to the implementations made in the project.

-Shared the project results within IDSA community via IDSA's Ecosystem Building Call (ATOS participated to present their implementations).

In the last year of the project, we plan to communicate the project results within the IDSA network and events. Especially we would like to focus on 1) project's technical outcomes implementing IDS standards, 2) standardization efforts that aim to facilitate data sharing in agriculture industry. These will be disseminated via online channels and events where IDSA will organize or be part of.

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4.14 AGS

AGS has participated actively in the communication and dissemination of the project's activities and results throughout its stakeholders and partners in Latvia and the Baltics region, as well as national technology and competence centres. The project was also presented by AGS during the InnoPanorama expo event in Kaunas, Lithuania on the 22-24th of September 2022.

4.15 AFL

AFL has organized and participated in various events for agri-food stakeholders, during which it has disseminated the results and outcomes of the FlexiGroBots project for Y2. One of the biggest and most important of such events is the Digital Farm Forum – the international conference for agri-food business, innovation and policy leaders, organized annually by AFL. FlexiGroBots was one of the projects that presented in event.

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5 Conclusions and next steps

Dissemination task (T7.1):

The dissemination task of M12-M24 focused on presenting the work of FlexiGroBots at conferences and exhibitions. Almost all of the KPIs set by M24 have been achieved, missing only the scientific publications, which will be given more importance during the last year of the project. During this second year, we reached the planned steps from the previous communication and dissemination report, such as organization of three project events, participation in international conferences, exploiting synergies with other projects, publishing open-source datasets and demonstrating the work and progress achieved within the project with the first scientific publication.

Next steps:

- 1. Participation in more top-ranked conferences, such as ICRA 2023, ECPA 2023, IGARSS 2023, IROS 2023, RSS 2023 to spread the work done within FlexiGroBots;
- 2. Participation in the European Robotic Forum (ERF) 2023 in order to increase project communication/dissemination & exploitation activities;
- 3. Achieve more scientific publications to disseminate the importance of the project to the scientific community;
- 4. Publish more datasets generated within FlexiGroBots;
- 5. Participation in industry events to target key stakeholders.

Communication task (T7.2):

During the second year of the project, the communication task focused on promoting and communicating the project's achievements through press releases, newsletters, blogs, website revamp and maintenance, engagement on social media, as well as creating numerous marketing materials such as brochure, poster, project video, etc. Almost all KPIs set by M24 have been achieved, except LinkedIn Visitors, which are expected to reach the target by the end of the year.

Next steps:

- 1. Website revamp with new content and structure to give more visibility to the Pilots.
- 2. Continue posting blogs on various relevant topics;
- 3. Continue the same pattern of posting on social media two tweets per week and at least three LinkedIn posts per month;
- 4. Launch the 2nd release of the FlexiGroBots Platform;
- 5. Produce another poster, brochure and additional infographics;
- 6. Continue providing content to media outlets to increase media coverage on FlexiGroBots, with an accent on Pilots and 2nd release of the FlexiGroBots Platform.
- 7. Publish the FlexiGroBots Newsletter every six months;

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8. Support and promote partners' participation in various events.

Project activities that will take place between M24 and M36 will be reported in D7.12 Communication report 3 in December 2023.

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- [2] S. Vélez, M. Ariza-Sentís, and J. Valente, "Mapping the spatial variability of Botrytis bunch rot risk in vineyards using UAV multispectral imagery," *European Journal of Agronomy*, vol. 142, p. 126691, Jan. 2023, doi: 10.1016/j.eja.2022.126691.

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Annexes

| Social Network | Account | Туре | Followers | Link |
|-------------------|---------------|--|---|--|
| LinkedIn | Seresco (SER) | Partner | 10 050 | https://www.linkedin.com/posts/seresco_el-proyecto-flexigrobots- liderado-por-seresco-activity-6872443491192979456-vdl1/ |
| | | | | https://www.linkedin.com/feed/update/urn:li:activity:6877206649 866620928 |
| | | | | https://www.linkedin.com/feed/update/urn:li:activity:6891323541 107929088 |
| | | | https://www.linkedin.com/posts/seresco_seresco-flexigrobots- agriculturadeprecisiaein-activity-6960848748163805184- Ntx4?utm_source=share&utm_medium=member_desktop | |
| | | https://www.linkedin.com/posts/seresco_flexigrobots-publica-los- resultados-del-piloto-activity-6900394347561652224- moAu?utm_source=share&utm_medium=member_desktop | | |
| | | | | https://www.linkedin.com/posts/seresco la-id-que-emerge-en- oviedo-apoyada-por-idepa-activity-6911608521461493760- D31j?utm source=share&utm medium=member desktop |

Table 7: Social Media posts – External accounts

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| Social Network | Account | Туре | Followers | Link | | | |
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| | International Data Spaces Association (IDSA) | Partner | 4253 | https://www.linkedin.com/posts/international-data-spaces- association_dataspacestuesday-dataspace-activity- 6927255833000988672-of-l | | | |
| | | | | https://www.linkedin.com/posts/international-data-spaces- association_ids-reference-architecture-as-the-basis-for-activity- 6884846940572418048- AoDQ?utm_source=share&utm_medium=member_desktop | | | |
| | | | | https://www.linkedin.com/posts/international-data-spaces- association_data-spaces-now-7-lets-build-data-spaces-activity- 6915620373484969984- dbJA?utm_source=share&utm_medium=member_desktop | | | |
| | Anil Turkmayali - IDSA | Partner | 500+ connections | https://www.linkedin.com/feed/update/urn:li:activity:7001530308 453920768/?actorCompanyId=75109713 | | | |
| | Lars Nagel - IDSA | Partner | 2257 | https://www.linkedin.com/posts/lars-nagel- 704411b8 dataeconomy-datasharing-dataspaces-activity- 6919380571831820288- RIR1?utm source=share&utm medium=member desktop | | | |
| | Khushbu Kumari | Other | 500+ connections | https://www.linkedin.com/posts/khushbu-kumari- 404024184 agricultureabrrobots-agricultural-technological- activity-6947536374333915136- go9g?utm source=share&utm medium=member desktop | | | |
| | SOMIRO – SOFT MILLIROBOT | Project | 72 | https://www.linkedin.com/feed/update/urn:li:activity:6986330706 637414400/?actorCompanyId=75109713 | | | |

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| | | | | https://www.linkedin.com/posts/art21 robotics-technology- innovation-activity-6949611835058745344- CVXf?utm source=share&utm medium=member desktop | | | |
| | | | | https://www.linkedin.com/posts/art21_collaborative-disease- detection-with-uavs-activity-6953338462397759488- 3bll?utm_source=share&utm_medium=member_desktop | | | |
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| | | | | https://www.linkedin.com/posts/art21_commercial-exploitation- roadmap-activity-6939522178111434752- AMKS?utm_source=share&utm_medium=member_desktop | | | |
| | | | | https://www.linkedin.com/posts/art21_ai-precisionagriculture- pressrelease-activity-6963363989175091201- vFOU?utm_source=share&utm_medium=member_desktop | | | |

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| | | | | https://www.linkedin.com/posts/art21_newsletter-agrifoodtech- technology-activity-6947787114025525248- LjWS?utm_source=share&utm_medium=member_desktop | | | |
| | | | | <u>https://www.linkedin.com/posts/art21_serbia-technology-agrifood-activity-6936935118997528576-yMT-</u> ?utm_source=share&utm_medium=member_desktop | | | |
| | AgriFood Lithuania DIH | Partner | 1209 | https://www.linkedin.com/posts/agrifood-lithuania-dih lithuania- robotics-technology-activity-6935968150249213953- cVLG?utm_source=share&utm_medium=member_desktop | | | |
| | | | | https://www.linkedin.com/posts/agrifood-lithuania-dih_ai- precisionagriculture-pressrelease-activity-6963434239790907393- 7j7K?utm_source=share&utm_medium=member_desktop | | | |
| | BioSense Institute (BIO) | Partner | 5145 | https://www.linkedin.com/posts/biosense- institute_quantumsystems-uav-agritech-activity- 6918143159243784193- 6eNZ?utm_source=share&utm_medium=member_desktop | | | |
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| | Probot Oy | Partner | 2304 | https://www.linkedin.com/posts/probot_peltorobottimme- koeajot-ruukissa-activity-6970704432002969600- IAaN?utm_source=share&utm_medium=member_desktop |
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| | Maria Ruottinen – Probot Oy | Partner | 500+ connections | https://www.linkedin.com/posts/mariaruottinen_maatalouskonem essut-peltoautomaatio-maatalousrobotiikka-activity- |

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| | Miguel Peraqui - Revista Restauradores | | 202 | https://www.linkedin.com/posts/miguelperaqui_terras-gauda-idi- proyecto-europeo-para-activity-6905113411705741312- JJhB?utm_source=share&utm_medium=member_desktop | | | |
| Angela Ribeiro Seijas - C | | Partner | 378 | https://www.linkedin.com/posts/angela-ribeiro-seijas- 24b3b760 %C3%A1ngela-ribeiro-la-rob%C3%B3tica-va-a-ser-com activity-6913162113569935360- 1YMC?utm source=share&utm medium=member desktop | | | |
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| Twitter | João Valente - WUR | Partner | 148 | https://twitter.com/J0A0Valente/status/1465971403052789764 | | | |
| | Atos España | Partner | 4072 | https://twitter.com/AtosES/status/1466288276726325253 | | | |
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| | Robotics4EU | Project | 1052 | https://twitter.com/Robotics4EU/status/1529401614435500032 |
| | Saara T | Other | 82 | https://twitter.com/scetaire/status/1536669474711126021 |
| | Terras Gauda (TER) | Partner | 7659 | https://twitter.com/TerrasGauda/status/1545003013860990979 |
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| | Probot Oy | Partner | 73 | https://twitter.com/ProbotOy/status/1557708495100715009 |
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| | Social Drones Lab - WUR | Partner | 124 | https://twitter.com/socialdroneslab/status/1577575739402194945 |
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| | | | | https://twitter.com/socialdroneslab/status/1585984402328555520 |
| | Maaseutu.fi | Media | 3069 | https://twitter.com/MaaseutuFi/status/1580875117294661632 |
| | Francisco Javier Nieto De | Project | 75 | https://twitter.com/BrkfstResearch/status/1589651940165578752 |
| | Santos | coordinator | | https://twitter.com/BrkfstResearch/status/1589652444677812224 |
| Instagram | Cristina Monteserin – Seresco (SER) | Partner | 30 | https://www.instagram.com/p/CXIQLpIoOYZ/?igshid=MDJmNzVkMj Y%3D |

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| Social Network | Account | Туре | Followers | Link |
|-------------------|--------------------------|---------|-----------|--|
| | | | | https://www.instagram.com/p/CbGOsI9MWGs/?igshid=MDJmNzVk MjY%3D |
| | Seresco (SER) | Partner | 327 | https://www.instagram.com/p/CXvYrZJN02A/?igshid=MDJmNzVkM jY%3D |
| | | | | https://www.instagram.com/p/Cb7OL2FtcBD/?igshid=MDJmNzVkM jY%3D |
| | | | | https://www.instagram.com/p/Cg1CFExtnIm/?igshid=MDJmNzVkM jY%3D |
| В | BioSense Institute (BIO) | Partner | 589 | https://www.instagram.com/p/CarySAtKKDC/?igshid=MDJmNzVkM jY%3D |
| | | | | https://www.instagram.com/p/CcFp5Seq3Jz/?igshid=MDJmNzVkMj Y%3D |
| | | | | https://www.instagram.com/p/Ce3bD_HK11D/?igshid=MDJmNzVk MjY%3D |
| | | | | https://www.instagram.com/p/ChR5sL0qT0M/?igshid=MDJmNzVk MjY%3D |
| | Zeleni hit d.o.o (ZEL) | Partner | 7941 | https://www.instagram.com/p/CfmXvIcszNY/?igshid=MDJmNzVkMj Y%3D |
| | | | | https://www.instagram.com/p/CgBnvSQsJRw/?igshid=MDJmNzVk MjY%3D |

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| Social Network | Account | Туре | Followers | Link |
|-------------------|--------------------|----------------|-----------|--|
| | | | | https://www.instagram.com/p/ChHtXKejz9e/?igshid=MDJmNzVkMj Y%3D |
| | | | | https://www.instagram.com/p/CjkyDfQDPvu/?igshid=MDJmNzVkM jY%3D |
| | Terras Gauda (TER) | Partner | 7764 | https://www.instagram.com/p/CftWkOkNwhQ/?igshid=MDJmNzVk MjY%3D |
| | | | | <u>https://www.instagram.com/p/Cg_vE0btsq-</u> /?igshid=MDJmNzVkMjY%3D |
| | Probot Oy | Oy Partner 135 | | https://www.instagram.com/reel/CjnE4JwOuzR/?igshid=MDJmNzV kMjY%3D |
| | | | | https://www.instagram.com/reel/Ch7DSK3g9Bf/?igshid=MDJmNzV kMjY%3D |
| Facebook | BioSense Institute | Partner | 2500 | https://www.facebook.com/biosense.institute/posts/pfbid02Da9Hz VSUsfX8uNwewaXMEmTv1EyGe88R7D9Ky8kd5cST7s9MczsnKVez9Y v1fWaJI |
| | | | | https://www.facebook.com/biosense.institute/posts/pfbid02Jcpuu e8UuK8h8RHjRTZVv6jM235Ym3uEeWoepKNAaRKveVhqC64FNjAoq 64cvQacl |
| | | | | https://www.facebook.com/biosense.institute/posts/pfbid0Eau9Qk PPmRHSYf2bhxb45py6UtsoJEABGByZjTreqVVnXyL2zMjMnFKUfLXiH ZgJI |

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|-------------------|------------------|-------------------|-----------|--|
| | | | | https://www.facebook.com/biosense.institute/posts/pfbid02JsnhM QXc6H8MoQMwgEhtHP2fBxojZaH78RvDgzUtYTCnZa64h2yEMe1sta 5BrEz5I |
| | | | | https://www.facebook.com/biosense.institute/posts/pfbid02fntp7 QV4abKdauSQmveVHx7gJqen1WNjCFEmHRLBv3reWBvJi7CMah612 CKesKo4I |
| | | | | https://flexigrobots-h2020.eu/news/2nd-official-press-release |
| | | | | https://www.facebook.com/biosense.institute/posts/pfbid02AVFtx XBeChfRwppkrbUJUUNkbjdVDnKXGiNCvbXoPveLuTSFVnJPmEwZmZ hD4g8hl |
| | Zeleni hit d.o.o | hit d.o.o Partner | 14 000 | https://www.facebook.com/zelenihit.rs/posts/pfbid0wJgFweHUgu maNjW5YEC3BiJbgHsQaKQqXFr6SmsKBgkbLQ83ZWeP1L4CNJiJDs6o l |
| | | | | https://www.facebook.com/groups/844066999123200/?multi_per malinks=2169287849934435&ref=share |
| | | | | https://www.facebook.com/zelenihit.rs/posts/pfbid0beJghPLpesBT pHG3rvUXpYZJ8fSAMnt1itVS9UrmFTQ7N7bw5eHPGF4H7p7oJrj9l |
| | Probot Oy | Partner | 245 | https://www.facebook.com/watch/?v=375991114699669 |
| | | | | https://www.facebook.com/watch/?v=1478860875900943 |
| | | | | https://www.facebook.com/watch/?v=3124870231102743 |
| | | | | https://www.facebook.com/watch/?v=414772550830701 |

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| Social Network | Account | Туре | Followers | Link |
|-------------------|---------|---------|-----------|---|
| | Seresco | Partner | 2000 | https://www.facebook.com/seresco.es/posts/pfbid02ePrr52UHjH3 u9eimW122WoP7mVAyC34J8bqvKNtaU3hfrQEVUxj39wanRdTqzCm 11 |
| | | | | https://seresco.es/actualidad-noticias/flexigrobots-objetivos- cumplidos-en-el-piloto-de- seresco?fbclid=IwAR3qKNRVreAud2JwaiWEUhA5syS_H6BG2m2Lt7 TUCYZmzqB4ImFzGECAS0M |
| | | | | https://seresco.es/actualidad-noticias/flexigrobots-publica-los- resultados-del-piloto-liderado-por- seresco?fbclid=IwAR00PRzIN7HWNpvG9xAUhR1EvCDef4yfNBC1Ztb GnfGBW82aFC33e6FZJ14 |
| | | | | https://seresco.es/actualidad-noticias/flexigrobots-en-el-programa- a-media-sesion-de-radio- intereconomia?fbclid=IwAR1i yEgL7cQivUV3i0AULYIe2BfK25TeThtd DZTf99qRped4cNg0Ak-Ub0 |
| | | | | https://seresco.es/actualidad-noticias/la-i-d-que-emerge-en- oviedo-apoyada-por- idepa?fbclid=IwAR3oBbJq5chXKU6QmmJfv7ZWyNYeHSXqut8JCevcZ rfFxmIFB7L1YCPH0Uo |
| | | | | https://www.facebook.com/seresco.es/posts/pfbid0qVKxTbuexUXy adrfS5X172xnRoCefz64kxRi5advigBWCUbkka7fBaM7YZahb3bkl |
| | | | | https://www.facebook.com/watch/?v=331725818379974 |

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| Social Network | Account | Туре | Followers | Link |
|-------------------|--------------|---------|-----------|--|
| | Robotics4EU | Project | 768 | https://www.facebook.com/Robotics4EU/posts/pfbid02gVdVLEe6h cygbGwFPm51ppxDomu5ruAfvvDkaoKMkDQJd2GdjBFQAtQWmkEi 44bzl |
| | Terras Gauda | Partner | 12 412 | https://www.facebook.com/bodegasterrasgauda/posts/pfbid02axL Hgka3bhXa2u9FAQzUtrQUfRttihfnDkSiyNfhP5b7cT6v1KTgXARYm2J bnJQkl |
| | | | | https://www.facebook.com/bodegasterrasgauda/posts/pfbid02F9z LvwAwdYZRHzZ2GmqG3pYNk4tijeLLCBdXvvQBUEh82JddrsvGFLfiAe cLuPrZI |

Table 8: FlexiGroBots publication at partners' and external websites

| Title | Partner | Estimated Audience ¹ | Link |
|--|-----------|---------------------------------|---|
| FlexiGroBots is successfully building an innovative platform to help farmers | CEPS | 35 340 | https://www.ceps.eu/ceps-news/flexigrobots-is- successfully-building-an-innovative-platform-to-help- farmers/ |
| FlexiGroBots project halfway through | Probot Oy | 720 | https://probot.fi/flexigrobots-hanke-puolivalissa |

¹ The estimated audience reached has been calculated through the free online tool Siteworth Traffic (<u>https://www.siteworthtraffic.com/</u>) which provides information on the number of unique visitors of a website on a daily, monthly and yearly basis. The number presented in the tables for Estimated Audience Reached corresponds to the monthly unique visitors and it calculates all the people accessing the website. For estimating the number of people reading the news or article dedicated to FlexiGroBots we recommend considering only between 5% and 7% of the monthly views. This is a standard practice in communication agencies.

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| Title | Partner | Estimated Audience ¹ | Link |
|---|----------------------|---------------------------------|---|
| FlexiGroBots: Objectives achieved in the Pilot led by Seresco | Seresco | 9510 | https://seresco.es/actualidad-noticias/flexigrobots- objetivos-cumplidos-en-el-piloto-de-seresco |
| FlexiGroBots publishes the results of the Pilot led by Seresco | Seresco | 9510 | https://seresco.es/actualidad-noticias/flexigrobots- publica-los-resultados-del-piloto-liderado-por-seresco |
| Robotics to help with agricultural work | CSIC | 248 610 | https://rdcsic.dicat.csic.es/en/agroalimentacion-2/119- projects/626-robotics-to-help-with-agricultural-work |
| Field work of the Spanish Pilot of the FlexiGroBots project | Seresco | 9510 | https://seresco.es/actualidad-noticias/trabajos-de-campo- del-piloto-espanol-del-proyecto-flexigrobots |
| Progress of the FlexiGroBots project | Seresco | 9510 | <u>https://seresco.es/actualidad-noticias/progreso-del-</u> proyecto-flexigrobots |
| FlexiGroBots: Smart Farming with AI and Big Data | IDSA | 0 | https://internationaldataspaces.org/environmentally- friendly-agriculture-with-ai-and-big-data/ |
| R&D emerging in Oviedo supported by IDEPA. Seresco talks about the CIP Olive, PLAGo and FlexiGroBots projects | Seresco | 9510 | https://seresco.es/actualidad-noticias/la-i-d-que-emerge- en-oviedo-apoyada-por- idepa?fbclid=IwAR3oBbJq5chXKU6QmmJfv7ZWyNYeHSXqu t8JCevcZrfFxmIFB7L1YCPH0Uo |
| The FlexiGroBots project in La Sexta Noticias | Seresco | 9510 | https://seresco.es/actualidad-noticias/el-proyecto- flexigrobots-en-la-sexta-noticias?fbclid=IwAR3Y- 3H3nDeiNXarccPuJssGziJwqNyTY_Q9sg1wbDk_3McQtAvnz 7pfFWY |
| Use of drones and ground robots to detect disease and weeds in crop | Extensius website | 0 | https://extensius.cat/2022/03/30/utilitzacio-de-drons-i- robots-terrestres-per-detectar-malalties-i-males-herbes- en-el-cultiu/ |

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Table 9: FlexiGroBots publications in digital media outlets

| Title | Date – Original Language | Media | Estimated Audience ² | Link |
|---|-----------------------------|---|------------------------------------|--|
| Robert, the CSIC harvesting robot that provides efficiency and health to workers and crops | 24/02/2022 Spanish | Innovaspain | 37 290 | https://www.innovaspain.com/robert-robot- csic-flexigrobots-transfiere-malaga-hector- montes/ |
| TERRAS GAUDA I+D+i: European project to improve the efficiency and sustainability of the vineyard | 10/03/2022 Spanish | Revista Restauradores | 0 | https://www.revistarestauradores.com/single- post/terras-gauda-i-d-i-proyecto-europeo-para- mejorar-la-eficiencia-y-sostenibilidad-del- vi%C3%B1edo |
| R&D emerging in Oviedo | 13/03/2022 Spanish | La Nueva España | 697 140 | https://www.lne.es/oviedo/2022/03/13/i-d- emerge-oviedo-63762567.html |
| Robotics to help with agricultural work | 21/02/2022 English | R+D CSIC | 248 610 | https://rdcsic.dicat.csic.es/en/agroalimentacion- 2/119-projects/626-robotics-to-help-with- agricultural-work |
| The CSIC presents robots for the grape harvest at the Transfiere Forum | 14/02/2022 Spanish | Canales sectoriales - Interempresas | 333 540 | https://www.interempresas.net/Horticola/Articu los/379897-El-CSIC-presenta-robots-para-la- vendimia-en-el-Foro-Transfiere.html |

² The estimated audience reached has been calculated through the free online tool Siteworth Traffic (<u>https://www.siteworthtraffic.com/</u>) which provides information on the number of unique visitors of a website on a daily, monthly and yearly basis. The number presented in the tables for Estimated Audience Reached corresponds to the monthly unique visitors and it calculates all the people accessing the website. For estimating the number of people reading the news or article dedicated to FlexiGroBots we recommend considering only between 5% and 7% of the monthly views. This is a standard practice in communication agencies.

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| Title | Date – Original Language | Media | Estimated Audience ² | Link |
|---|-----------------------------|-------------------------|------------------------------------|---|
| Moreno tours the facilities and initiatives present at the Transfiere Forum 2022 | 16/02/2022 Spanish | 20minutos | 7 755 660 | https://www.20minutos.es/videos/economia/49 57918-moreno-recorre-las-instalaciones-e- iniciativas-presentes-en-el-foro-transfiere-2022/ |
| «Robert», the robot that helps with the grape harvest | 17/02/2022 Spanish | La Opinión de Málaga | 317 970 | https://www.laopiniondemalaga.es/malaga/202 2/02/17/robert-carro-robot-ayuda-vendimia- 62809568.html |
| Robot "Gari" for healthier blueberries and higher yields | 19/09/2022 Serbian | agronews | 3690 | http://www.agronews.rs/robot-gari-za-zdravije- borovnice-i-vece-prinose/ |
| Robot "Gari" for healthier blueberries and higher yields | 19/09/2022 Serbian | AGROSMART | 10 710 | https://agrosmart.net/2022/09/19/robot-gari- za-zdravije-borovnice-i-vece-prinose/ |
| The BioSense Institute from Novi Sad developed the robot Gari to increase the blueberry yield | 19/09/2022 Serbian | Autonomija | 33 060 | https://autonomija.info/institut-biosens-iz- novog-sada-razvio-robota-garija-za-povecanje- prinosa-borovnice/ |
| The BioSense Institute developed the robot Gari to increase the blueberry yield | 19/09/2022 Serbian | eKapija | 140 370 | https://www.ekapija.com/news/3844962/institu t-biosens-razvio-robota-garija-za-povecanje- prinosa-borovnice |
| BIOSENSE INNOVATIONS IN AGRICULTURE - Robot "Gari" contributes to the increase of blueberry yield | 19/09/2022 Serbian | Plodna Zemlja | 7350 | https://plodnazemlja.com/2022/09/19/biosense -inovacije-u-poljoprivredi-robot-gari-doprinosi- povecanju-prinosa-borovnice/ |
| The robot "Gari" grows blueberries in Serbia | 19/09/2022 Serbian | mojnovisad | 57 030 | http://www.mojnovisad.com/vesti/robot-gari- gaji-borovnice-u-srbiji-id49604.html |

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| Title | Date – Original Language | Media | Estimated Audience ² | Link |
|---|-----------------------------|-----------------------------|------------------------------------|--|
| Robot "Gari" for digital management of blueberry production | 19/09/2022 Serbian | Poljosfera | 30 840 | https://www.poljosfera.rs/agrosfera/poljoprivre dne-vesti/robot-gari/ |
| Robot "Gari" for aiding agricultural workers | 19/09/2022 Serbian | 021 | 272 490 | https://www.021.rs/story/Novi- Sad/Vesti/317413/FOTO-Robot-Gari-za-pomoc- poljoprivrednicima.html |
| The robot "Gari" helps blueberries to have higher yields | 19/09/2022 Serbian | Danas | 778 920 | https://www.danas.rs/vesti/drustvo/robot-gari- pomaze-borovnici-da-ima-vece-prinose/ |
| BioSense from Novi Sad created "Gari", a blueberry robot | 19/09/2022 Serbian | BIZLife | 120 570 | https://bizlife.rs/novosadski-biosens-napravio- garija-robota-za-borovnicu/ |
| The BioSense Institute developed the robot Gari to increase the blueberry yield | 20/09/2022 Serbian | Vojvodina uživo | 30 210 | https://vojvodinauzivo.rs/institut-biosens-razvio- robota-garija-za-povecanje-prinosa-borovnice/ |
| ROBOT "GARI" - BioSense developed a MULTIROBOT SYSTEM for the improvement of blueberry production | 20/09/2022 Serbian | Blic | 2 318 130 | https://www.blic.rs/vesti/novi-sad/novosadski- robot-gari-biosens-za-unapredenje-proizvodnje- borovnice-razvio/4wrer2b |
| Robot 'Gari' for healthier blueberries and higher yields | 21/09/2022 Croatian | Poslovni dnevnik | 9600 | https://www.poslovni.co.rs/regija/robot-gari-za- zdravije-borovnice-i-vece-prinose-4354336 |
| Serbia: Do farming robots dream of blueberries? | 07/10/2022 English | Agroberichten Buitenland | 23 730 | https://www.agroberichtenbuitenland.nl/actuee l/nieuws/2022/10/07/serbia-robots |
| BioSense Institute Develops Robot Called Gari to Increase Blueberry Yields | 20/09/2022 English | ekapija | 140 370 | https://www.ekapija.com/en/news/3844962/bio sense-institute-develops-robot-called-gari-to- increase-blueberry-yields |

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| Title | Date – Original Language | Media | Estimated Audience ² | Link |
|---|-----------------------------|---------------------|------------------------------------|--|
| Serbia: Do farming robots dream of blueberries? | 10/10/2022 English | Horti Daily | 143 760 | https://www.hortidaily.com/article/9466861/ser bia-do-farming-robots-dream-of-blueberries/ |
| Futuristic fields: Europe's farm industry on cusp of robot revolution | 28/10/2022 English | Horizon Magazine | 17 198 550 | https://ec.europa.eu/research-and- innovation/en/horizon-magazine/futuristic- fields-europes-farm-industry-cusp-robot- revolution?pk source=twitter&pk medium=soci al&pk content=agriculture ict |

Table 10: FlexiGroBots – Radio interviews

| Title | Date – Original Language | Media | Estimated Audience ³ | Link |
|--|-----------------------------|--|------------------------------------|---|
| (Radio Interview) Sergio Álvarez from Seresco talks about the FlexiGroBots project on Radio Intereconomía | 16/12/2021 Spanish | 'A Media Sesión' - Radio Intereconomía | 669 480 | https://www.ivoox.com/en/sergio-alvarez- seresco-habla-del-proyecto-flexigrobots-audios- mp3 rf 79706696 1.html |

³ The estimated audience reached has been calculated through the free online tool Siteworth Traffic (<u>https://www.siteworthtraffic.com/</u>) which provides information on the number of unique visitors of a website on a daily, monthly and yearly basis. The number presented in the tables for Estimated Audience Reached corresponds to the monthly unique visitors and it calculates all the people accessing the website. For estimating the number of people reading the news or article dedicated to FlexiGroBots we recommend considering only between 5% and 7% of the monthly views. This is a standard practice in communication agencies.

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Table 11: FlexiGroBots publications in print media

| Title | Date – Original Language | Media | Estimated Audience ⁴ |
|---|-----------------------------|------------------|---------------------------------|
| Robot Gari increases blueberry yield | 21/09/2022 Serbian | Večernje novosti | 250 000 |
| Blueberry growers waiting on Robot Gari | 25/09/2022 Serbian | Politika | 300 000 |

Table 12: FlexiGroBots – TV interviews

| Title | Date – Original Language | Media | Estimated Audience ⁵ | Link |
|--|-----------------------------|-----------------------------------|------------------------------------|--|
| (TV interview) Transfiere Forum – CSIC, robot Robert and FlexiGroBots | 17/02/2022 Spanish | RTVE play – noticias andalucía | 3 168 540 | https://www.rtve.es/play/videos/not icias-andalucia/foro-transfiere- celebra-malaga/6378836/ |
| (TV interview) FlexiGroBots project and the "First conference of the berry fruits agrobusiness sector" | 28/02/2022 Serbian | B92 – show "Plodno i rodno" | 1 726 890 | https://youtu.be/ulw0WITxGco |

⁵ The estimated audience reached has been calculated through the free online tool Siteworth Traffic (<u>https://www.siteworthtraffic.com/</u>) which provides information on the number of unique visitors of a website on a daily, monthly and yearly basis. The number presented in the tables for Estimated Audience Reached corresponds to the monthly unique visitors and it calculates all the people accessing the website. For estimating the number of people reading the news or article dedicated to FlexiGroBots we recommend considering only between 5% and 7% of the monthly views. This is a standard practice in communication agencies.

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⁴ Data provided by Media Agency



| Title | Date – Original Language | Media | Estimated Audience ⁵ | Link |
|--|-----------------------------|---|------------------------------------|------------------------------|
| (TV interview) Robot Gari 06:15 – 13:58 | 12/11/2022 Serbian | AgroTV Srbija – show "Naše dobro" | 11 100 | https://youtu.be/KeL8FBaEdmE |
| (TV interview) FlexiGroBots project and the robot Gari 04:26 – 08:00 | 29/11/2022 Serbian | RTS Obrazovno-naučni program – show "Naučni portal" | 748 170 | https://youtu.be/ZpzZM7biHXI |

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