A European Cancer Image Platform Linked to Biological and Health Data for Next-Generation Artificial Intelligence and Precision Medicine in Oncology

Deliverable D7.4:
Report on Stakeholder Awareness Assessment

Reference	D7.4_EuCanImage_EIBIR_29092023
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Dissemination level	Public
Type	Report
Official Delivery Date	29/09/2023
Date of validation of the WP leader	29/09/2023
Date of validation by the Project Coordinator	29/09/2023
Project Coordinator Signature	

EuCanImage is funded by the European Union's H2020 Framework
Under Grant Agreement No 952103

Version log

Issue Date	Version	Involved	Comments
28/09/2023	1	Peter Gordebeke (EIBIR)	1st draft
28/09/2023	2	Xènia Puig (UB)	Comments on the 1st draft
28/09/2023	3	Peter Gordebeke (EIBIR)	2nd draft
29/09/2023	Final	Xènia Puig, Oliver Diaz, Karim Lekadir	Final and revised version

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Executive Summary

The EuCanImage project aims to revolutionize cancer imaging and AI in oncology through its multi-faceted objectives. A survey was conducted to assess the current state of stakeholder engagement and awareness. The findings reveal a robust academic output, with nearly two-thirds of partners having published their work. Target audiences for outreach are diverse, but specialized, focusing primarily on clinicians and AI developers. Stakeholder awareness levels are moderate, indicating both achievements and areas for improvement.

Based on these findings, future strategies include diversifying outreach channels, developing a unified engagement framework, and targeting low-awareness sectors. The report concludes with the implication that a nuanced, multifaceted approach to stakeholder engagement is essential for the project's ongoing and future success.

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Acronyms

AI: Artificial Intelligence

FAIR: Findable, Accessible, Inter-operable, Re-usable

ML: Machine Learning

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1 Introduction

The rapid advances in Artificial Intelligence (AI) and machine learning technologies hold tremendous promise for revolutionizing oncology, particularly in the realm of cancer imaging. However, the journey from technological innovation to clinical implementation is fraught with challenges. This is where the EuCanImage project enters the landscape as a game-changer. With its focus on building a secure, federated, and large-scale European cancer imaging platform, EuCanImage aims to transform the current state of cancer research and patient care. By leveraging a data resource of over 25,000 single subjects, this innovative platform seeks to address critical unmet clinical needs such as early lesion detection and precise tumor characterization. In addition, the project aims to develop a multi-scale AI development platform, create a FAIR (Findable, Accessible, Inter-operable, Re-usable) cancer imaging platform, and much more.

The Imperative of Stakeholder Engagement

While the technological and scientific milestones are undeniably crucial, the success of EuCanImage isn't solely determined by algorithms and data points. At its core, the project is about people—be it researchers striving for innovation, clinicians applying these advancements, or patients who stand to benefit the most. Therefore, stakeholder engagement emerges not as a supplementary activity but as a central pillar that supports the project's ambitious objectives.

The European landscape in healthcare is marked by a rich tapestry of clinical systems, legal frameworks, and data infrastructures. Within this context, the absence of large cancer imaging repositories creates a pressing challenge for AI communities and industries alike. Hence, stakeholder engagement in EuCanImage serves multiple purposes:

1. **Awareness & Education**: To inform and educate stakeholders about the project's objectives, capabilities, and potential impact on cancer care.

2. **Feedback Mechanism**: To gather crucial insights from stakeholders that can inform project development, ensuring that the platform meets real-world needs and expectations.

3. **Collaborative Partnerships**: To foster collaborations with academic, industrial, and clinical partners, thereby enriching the project's ecosystem.

4. **Ethical & Legal Compliance**: To navigate the complex ethical and legal terrain, particularly concerning data sharing and patient privacy.

5. **Sustainability & Adoption**: To ensure that the project's outcomes are not just groundbreaking but also sustainable and widely adopted across different healthcare settings.

The following report delves into how EuCanImage is navigating the multifaceted domain of stakeholder engagement, based on a comprehensive survey conducted among its consortium members. Through this lens, we aim to evaluate the current state of stakeholder awareness, identify gaps, and propose strategies for more effective and inclusive engagement moving forward.

2 Project objectives in relation to stakeholder engagement

The EuCanImage project is built on a foundation of key objectives designed to revolutionize cancer imaging and AI in oncology. Each of these objectives implicitly or explicitly calls for a robust stakeholder engagement strategy. Below are the primary objectives and their relevance to stakeholder engagement:

1. **FAIR Cancer Imaging Platform**: the project focuses on building a FAIR cancer imaging platform linked to biological and health data. This necessitates ongoing dialogue with data providers, clinicians, and AI developers to ensure the platform's usability and effectiveness.

2. **Data Curation and Scalability**: the project aims to provide comprehensive data curation and hosting tools. Engaging with stakeholders here ensures that the platform meets the real-world requirements of data managers and researchers.

3. **AI Development Platform**: the project also has the objective is to build a multi-center AI development platform for cancer imaging. The success of this relies on active collaborations with academic and industrial partners who bring in unique expertise in AI and imaging.

4. **AI Assessment and Benchmarking**: EuCanImage focuses on building an assessment platform for AI solutions in oncology care. This involves stakeholder engagement to define clinically relevant benchmarks and evaluation metrics.

5. **Legal Framework and Open Science**: Addressing legal and ethical issues in data sharing calls for close collaboration with legal experts, ethicists, and policymakers.

6. **Clinical Needs and Personalized Care**: the project focuses on addressing unmet clinical needs in personalized cancer care, which requires an understanding of the gaps and needs as perceived by clinicians and patients.

7. **Dissemination and Community Building**: EuCanImage also aims to create a large community of data contributors and AI developers.

These objectives underscore that stakeholder engagement isn't an isolated component but rather an integrated element essential for achieving the project's ambitions. The next sections will delve deeper into the current state and future strategies of stakeholder engagement based on our internal survey among project partners.

3 Consortium survey

To gain an in-depth understanding of stakeholder engagement within the EuCanImage project, a tailored survey was developed and disseminated to the entire consortium. This survey aimed to assess two key aspects:

1. The extent and nature of the stakeholder engagement activities undertaken by each partner.

2. The perceived level of awareness about EuCanImage among the stakeholders in the partners' respective communities.

3.1 Survey Distribution and Response

The survey was sent out to all 20 consortium partners, and a total of 17 submissions were received. This included 16 submissions from 14 unique partners, along with the submission from EIBIR, who developed the survey. This represents a substantial majority of the consortium, providing a comprehensive internal view of the stakeholder engagement efforts and their perceived effectiveness.

By capturing the insights of 15 out of 20 consortium partners, this survey offers a representative snapshot of the project's current stakeholder engagement landscape. The findings and analyses based on this survey form the backbone of this report, serving to evaluate the current state of stakeholder awareness, identify gaps, and propose future strategies for more effective engagement.

3.2 Publications and Academic Contributions

Approximately 65% of responding partners have published scientific work related to EuCanImage. In the light of multi-year, academically rigorous projects, this figure is quite significant. It signals a high level of academic output, bolstering both the intellectual footprint and the visibility of the project.

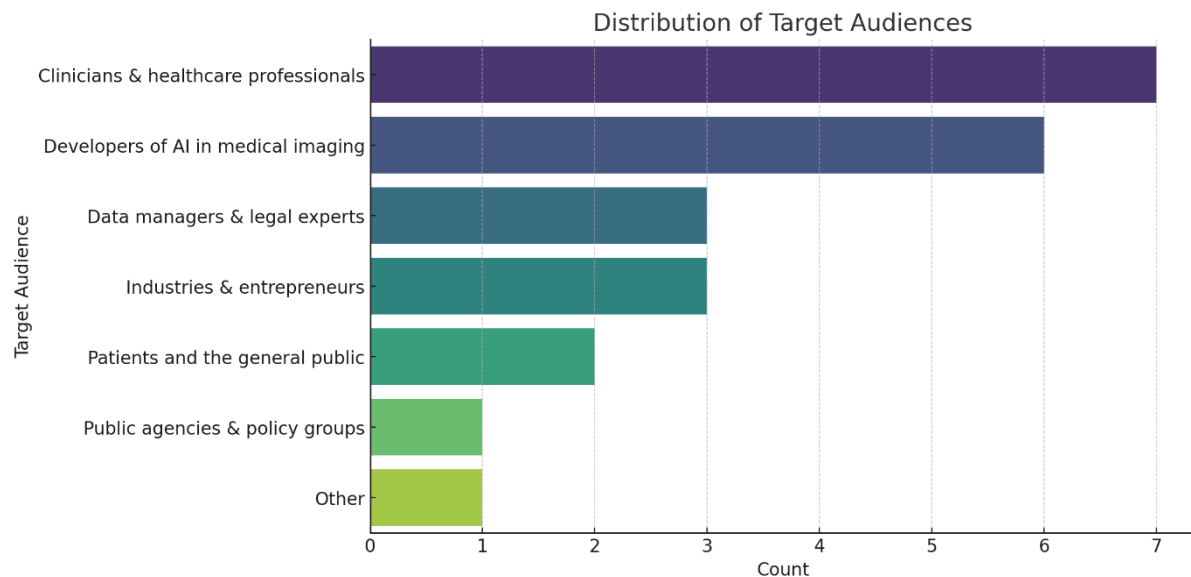## 3.3 Target Audiences for Publications

Figure 1: Survey responses regarding target audiences for (scientific) publications.

Our survey results paint a diverse landscape of target audiences. Clinicians and healthcare professionals lead the list, followed closely by developers in AI and medical imaging. This aligns seamlessly with the project's translational and technological ambitions. The inclusion of data managers and legal experts underlines the project's dedication to data governance. The presence of industries, entrepreneurs, and policy groups shows an understanding of the wider ecosystem that these scientific projects inhabit.

The bar chart above showcases the distribution of target audiences among the survey respondents. Here's a breakdown:

- **Clinicians & healthcare professionals**: 7 occurrences

- **Developers of AI in medical imaging**: 6 occurrences

- **Data managers & legal experts**: 3 occurrences

- **Industries & entrepreneurs**: 3 occurrences

- **Patients and the general public**: 2 occurrences

- **Public agencies & policy groups**: 1 occurrence

- **Other**: 1 occurrence

3.3.1 Observations:

1. **Clinician Focus**: The highest number of mentions were for "Clinicians & healthcare professionals", emphasizing the translational aim of many projects.

2. **AI Development**: Coming in closely are "Developers of AI in medical imaging", indicating that there's a significant focus on AI/ML innovations, which aligns well with the high-tech nature of biomedical imaging projects.

3. **Legal and Data Management**: Interestingly, "Data managers & legal experts" also make the list, underscoring the importance of data governance and legal considerations in these projects.

4. **Business and Policy**: "Industries & entrepreneurs" and "Public agencies & policy groups" are less frequently targeted but still present, showing that there's an awareness of the broader ecosystem in which these projects operate.

3.4 Presentations and Networking

Half of the unique partners have taken their work to the stage, presenting their scientific contributions on EuCanImage. Academic presentations serve as both a prelude to publications and a platform for immediate community feedback. Hence, a 50% presentation rate is noteworthy and serves as a harbinger of future academic contributions.
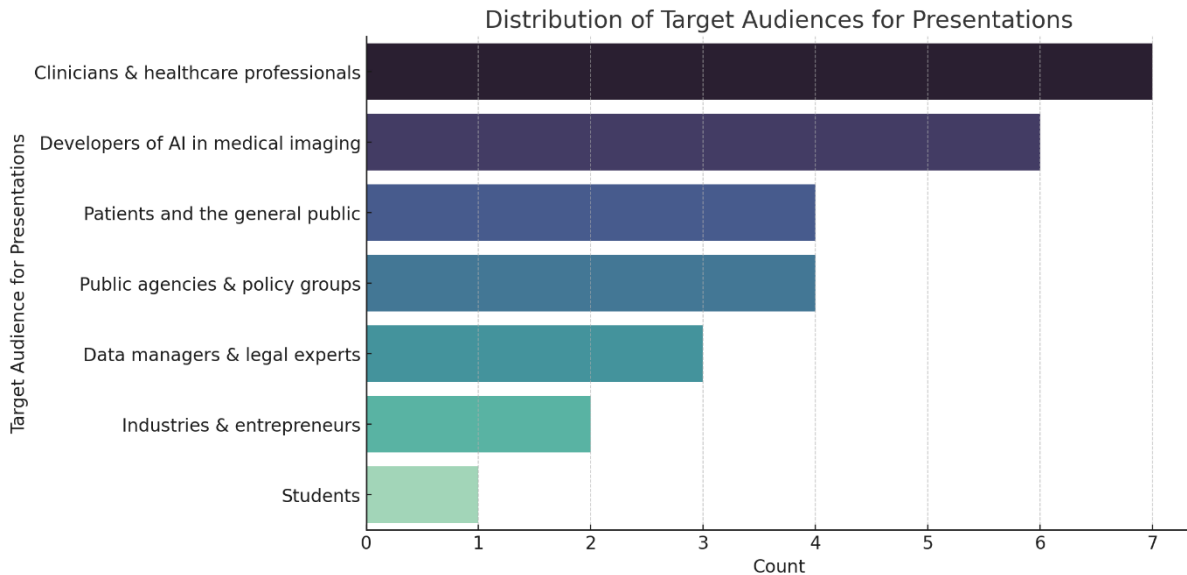
3.5 Target Audiences for Presentations

Figure 2: Survey responses regarding target audiences for presentations.

When it comes to presentations, clinicians and AI developers still dominate the target audience. What's intriguing is the increased focus on the general public and policy groups. This suggests a deliberate strategy to broaden the conversation around EuCanImage beyond the scientific community. The occasional focus on students and entrepreneurs indicates that the project is looking to influence the next generation of scientists and business leaders.

The bar chart provides insights into the distribution of target audiences specifically for the presentations related to EuCanImage. Here's the breakdown:

- **Clinicians & healthcare professionals**: 7 occurrences

- **Developers of AI in medical imaging**: 6 occurrences

- **Patients and the general public**: 4 occurrences

- **Public agencies & policy groups**: 4 occurrences

- **Data managers & legal experts**: 3 occurrences

- **Industries & entrepreneurs**: 2 occurrences

- **Students**: 1 occurrence

3.5.1 Observations
1. **Clinician and Developer Focus**: Just like the general target audiences, "Clinicians & healthcare professionals" and "Developers of AI in medical imaging" are also the primary target audiences for presentations. This reaffirms the project's focus on both technological innovation and healthcare application.

2. **Public and Policy Engagement**: Notably, "Patients and the general public" and "Public agencies & policy groups" are more frequently targeted in presentations than in scientific outreach. This suggests a conscious effort to engage with a wider public and policy stakeholders through academic presentations.

3. **Educational Component**: The presence of "Students" as a target audience for presentations might imply an educational component, which can be crucial for the long-term impact of the project.

4. **Business Engagement**: "Industries & entrepreneurs" are less frequently targeted, indicating that the business aspect, while acknowledged, may not be the primary focus in academic presentations.

3.6 Engagement with Lay Audiences

Here, the data reveals a gap. Only about 15% of responding partners have engaged with a lay audience. While this could be a strategic choice to focus on specialized communities, it also highlights an area where there could be room for more inclusive public engagement.

3.6.1 Observations:

1. **Specialized Focus**: The lower percentage could indicate that most of the work is highly specialized and primarily aimed at academic or professional audiences.

2. **Public Engagement**: Given that only about 14% have engaged with a lay audience, there might be room for improvement in public outreach and education about the project's aims and impacts.

3. **Strategic Decisions**: The percentage might also reflect strategic decisions about where to allocate resources for maximum impact. For instance, if the project's primary goals are technological innovation and healthcare improvements, then focusing on academic and professional audiences may make sense.

3.7 Direct Stakeholder Outreach

The analysis on direct stakeholder outreach offered a mixed bag. The responses ranged from formal consortium participation to more grassroots methods like press releases. However, the lack of a standardized approach suggests an opportunity for more coordinated, effective outreach strategies.

3.7.1 Observations:

1. **Diversity of Outreach**: The activities described range from formal consortium participation to more informal methods like press releases or general mentions in outreach activities. This suggests a multi-faceted approach to stakeholder engagement.

2. **Lack of Standardization**: The disparate nature of the responses, and even the use of vague or null indicators, suggests that there might not be a standardized or coordinated approach to outreach across partners.

3. **Opportunity for Guidance**: Implementing a more structured outreach strategy could be considered. Standardized guidelines or templates could help streamline these efforts and make them more effective.

3.8 Stakeholder Awareness Levels

With an average awareness level score of 6, the project seems to be on a moderate footing in terms of its self-assessed visibility among stakeholders. The most common awareness level was reported as 7 though, and the majority of respondents would score it at 6 or higher (11 out of 16). The data, however, exhibits room for improvement, especially among partners who rated the awareness level at or below the 25th percentile.
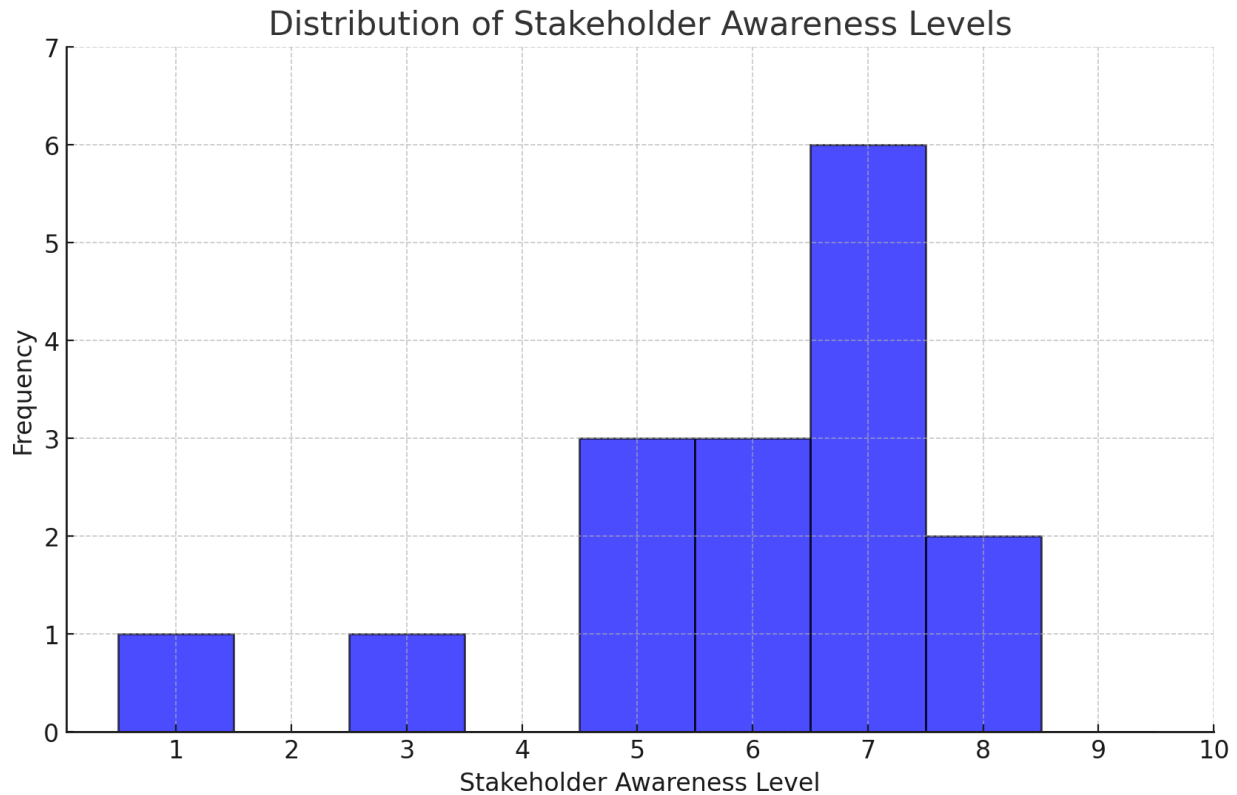

Figure 3. Survey responses regarding self-assessment of stakeholder awareness levels.

3.8.1 Observations:

1. **Moderate Awareness**: The mean value of 5.94 suggests a moderate level of awareness among stakeholders. This could be considered neither particularly low nor high, and may indicate a balanced level of outreach so far.

2. **Variability**: The standard deviation of 1.84 indicates that there's some variability in the data, but it's not extremely spread out. This means that most partners perceive the awareness level to be around the mean value, albeit with some exceptions.

3. **Room for Improvement**: The maximum awareness level is 8, which shows that even the most optimistic respondents don't see full awareness among their stakeholders. This suggests room for improvement in outreach and dissemination activities.

3.9 Synthesis and Implications

1. **High Academic Output**: The substantial percentage of partners who have published or presented indicates a robust intellectual output. However, it may also signal a potential for diversifying the modes of dissemination, especially towards lay audiences.

2. **Multi-faceted Engagement**: The variety in target audiences—from clinicians to policy makers—indicates a multi-faceted approach to stakeholder engagement. Yet, there's room for more structured outreach to specialized and public audiences.

3. **Opportunity for Coordination**: The diversity in outreach methods and the lack of standardization across responses point to an opportunity for a more unified strategy. Given the pan-European, highly innovative nature of the project, a coordinated stakeholder engagement plan could enhance impact.

4. **Balanced but Cautious Awareness**: The moderately positive level of stakeholder offers a springboard for targeted strategies to elevate awareness, especially among those sectors where it currently lags.

Through the lens of our internal survey, this report captures the consortium's collective efforts and challenges in stakeholder engagement. It sets the stage for the next steps in a coordinated, effective, and inclusive outreach strategy.

4 Future strategies for engagement

Given the insights gleaned from the consortium survey and the overarching objectives of the EuCanImage project, several strategies emerge for optimizing future stakeholder engagement:

1. **Diversify Outreach Channels**: While academic contributions are robust, there's room to engage with the lay public. Utilizing different media formats like better social media campaigns can broaden the project's reach.

2. **Unified Outreach Framework**: The survey revealed diverse approaches to stakeholder engagement. An even more centralized framework could streamline these efforts, creating a unified narrative that strengthens the project's impact.

3. **Public and Policy Engagement**: Given that presentations often target a wider public and policy stakeholders, extending this focus to other dissemination channels would be beneficial. This aligns well with the project's ambitions to influence healthcare policy.

4. **Educational Partnerships**: The occasional focus on students in the survey suggests an opportunity for educational partnerships. Creating curricula can help build a future workforce aligned with the project's objectives.

5. **Legal and Ethical Workshops**: Given the project's significant focus on data governance and legal frameworks, workshops and seminars on these topics can serve to educate both consortium members and external stakeholders.

5 Conclusion

The consortium survey has served as a mirror, reflecting both the strengths and areas for improvement in the EuCanImage project's stakeholder engagement efforts.

Key Findings

1. A high level of academic output among consortium partners, with nearly two-thirds having published their work.

2. A diverse yet specialized focus in target audiences for outreach and presentations.

3. Moderate but varying levels of stakeholder awareness, with room for improvement.

Implications for the Project

1. The strong academic output indicates that the project is making significant intellectual contributions but may need to diversify its dissemination channels to include the lay public.

2. The diverse target audiences align well with the project's multifaceted objectives but point to the need for a more centralized and coordinated engagement strategy.

3. The moderately positive awareness levels suggest that while the project is on the radar of relevant communities, there is a need for targeted efforts to elevate its profile further.

The findings of this survey underscore the need for a nuanced, multifaceted approach to stakeholder engagement—one that is as complex and ambitious as the EuCanImage project itself. As we move forward, these insights will serve as guideposts, shaping a more effective, inclusive, and impactful strategy for stakeholder engagement.