A Multimodal AI-based Toolbox and an Interoperable Health Imaging Repository for the Empowerment of Imaging Analysis related to the Diagnosis, Prediction and Follow-up of Cancer

Deliverable 9.6

Final Dissemination and Communication Activities Report

WP9 – Dissemination, Awareness Raising and Clustering

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Executive Summary

This document outlines the Communication and Dissemination (C&D) tools, activities, and results throughout the project. Since we comprehensively detailed the activities that took place from the beginning of the project to the 15th of March 2023 in the first (D.9.3) and second (D.9.4) activity reports, this document primarily focuses on the activities carried out during the last reporting period, from the 16th of March 2023 until the 31st of March 2024. However, we present the accumulated results in section 4, and the compilation of the C&D activities in the annexes of this document.

We conclude that the overall assessment of all the C&D tools and activities of the INCISIVE project is very positive, since all the efforts undertaken in the project have been effectively disseminated. We trust that this wealth of knowledge will persistently expand through initiatives such as the EUCAIM project and other potential projects, benefiting future research aimed at improving cancer diagnosis and prediction using artificial intelligence and big data.

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Terms and Abbreviations

Abbreviation	Description
AI	Artificial Intelligence
AI4HI	Artificial Intelligence for Health Imaging (cluster)
C&D	Communication and Dissemination
EC	European Commission
KPIs	Key Performance Indicators
WP	Work Package

1 Introduction

1.1 Purpose and scope

This deliverable aims to present the final report of the project's C&D activities. Thus, this document aligns with all the WP9 deliverables we list below in section 1.3. and includes the description of the activities and results obtained during the last reporting period, from the 16th of March 2023 to the 31st of March 2024.

1.2 Document structure

We have structured this document following the definitions of C&D shared by the European Commission (EU, 2022- Reference 1):

- **Communication** is "taking strategic and targeted measures for promoting the action itself and its results to a multitude of audiences, including the media and the public, and possibly engaging in a two-way exchange".

- **Dissemination** means "sharing research results with potential users – peers in the research field, industry, other commercial players and policymakers. By sharing your research results with the rest of the scientific community, you are contributing to the progress of science in general".

At times, ambiguity exists between these terms, leading to certain activities being categorized under both "communication" and "dissemination". Therefore, we chose to distinguish solely the outcomes derived from communication tools (e.g., the website and social media, which also serve dissemination functions) from those achieved through C&D activities (e.g., publications and events).

Apart from the results, we include the overall conclusions of the C&D activities performed.

1.3 Relation with other deliverables

This deliverable is closely related to the following deliverables:

- **D9.1** INCISIVE Web Presence

- **D9.2** Communication and Dissemination Plan

- **D9.3** First Dissemination and Communication Activities Report

- **D9.5** Clustering Events Proceedings and Raising Awareness Campaigns Results V1

- **D9.6** Final Dissemination Activities Report

- **D9.7** Clustering Events Proceedings and Raising Awareness Campaigns Results V2

2   Communication tools

The D.9.2 C&D Plan delineated a series of strategies and instruments aimed at amplifying the project's impact. The plan expected to achieve the following objectives:

- **Promote** - Inform and educate all interested communities;

- **Inform** - Make the outcomes developed in the INCISIVE project available to the different relevant target audiences

- **Engage** - Receive inputs and feedback from the various target groups to the different project activities, i.e. requirements, pilot activities, etc.

- **Exploit** - Enhance INCISIVE results exploitation potential

- **Make sustainable** - Ensure that the outputs will be sustained after the end of the project lifetime.

The sub-points of this chapter describe the communication tools that we developed and their results.

2.1   Visual identity

We developed the project's visual identity, encompassing the project's logo, typography, colors, and applications, at the onset of the INCISIVE project. We also designed Word and PowerPoint templates that have been used in internal and external project presentations.

Figure 1: INCISIVE's logo
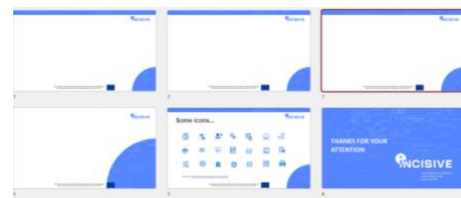
Figure 2: INCISIVE's PPT template.

We adhered to the visual identity guidelines when creating all public materials for the project, including scientific posters and videos. Presented below are a compilation of some examples.

Figure 4: Cover of the INCISIVE Feasibility Study Guide for data providers

Figure 5: Rollup for the INCISIVE's Madrid event (7/11/2023).
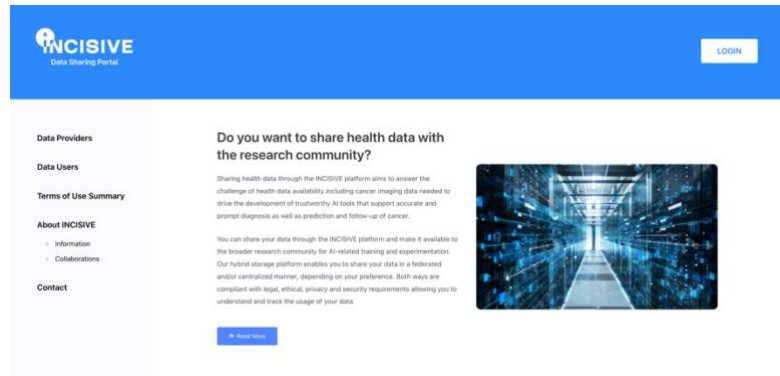
Figure 6: Homepage of the INCISIVE Data Sharing Portal.
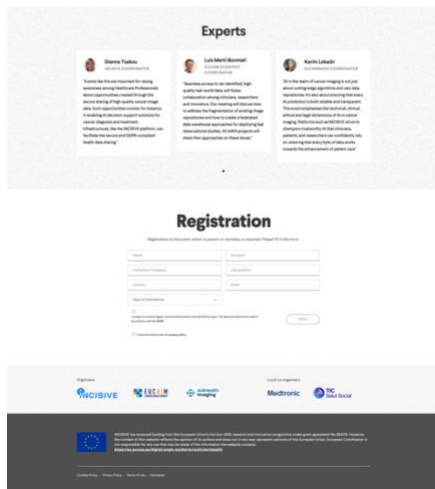
Figure 3: Landing page for the INCISIVE's Madrid event (7/11/2023).

Figure 7: Health care providers demonstration video published on YouTube.
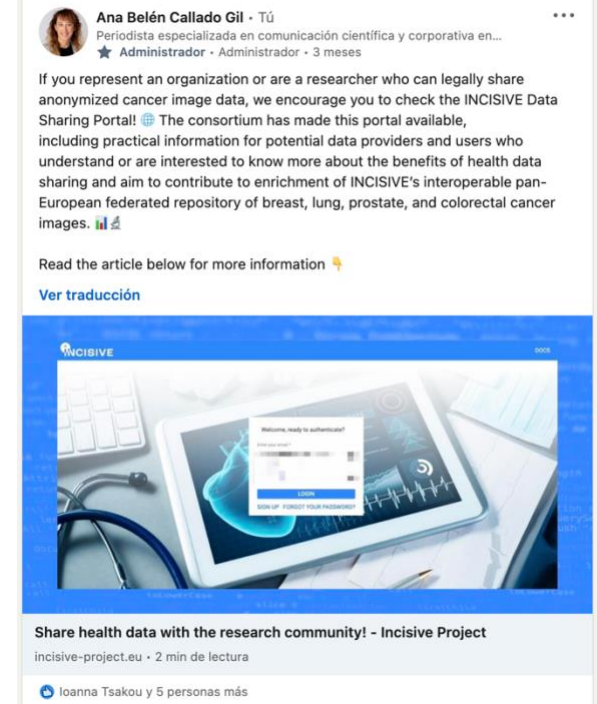
Figure 8: Example social media posts

2.2 Website

The [INCISIVE project's website](#) serves as the primary communication tool for boosting project visibility. Launched in January 2021, its purpose is to disseminate meaningful knowledge to target stakeholders and foster community engagement. The rationale behind the website's development is extensively outlined in the INCISIVE Web Presence deliverable (D9.1).

We have consistently updated the website with new content, predominantly through news articles and evens, and have made various adjustments to enhance both design and user experience. In May 2022, we updated the cookies policy and changed the website's analytics tool to comply with the General Data Protection Regulation, switching from Google Analytics to the European-based analytical tool Matomo. Additionally, we disabled all the cookies by default, so users must accept them individually.
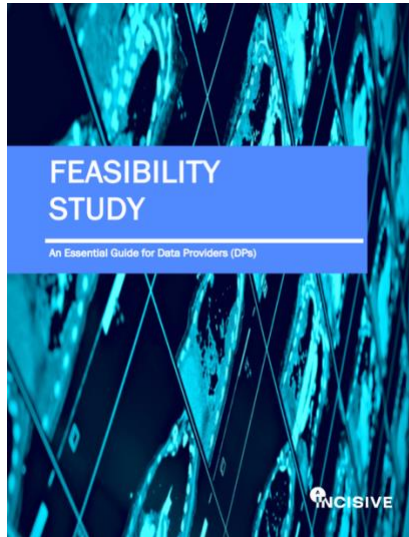
This modification impacted the internal monitoring of the website's Key Performance Indicators (KPIs), as we lack data on users who decline cookies. Consequently, the figures provided below notably decreased compared to those in the initial reporting period (D9.3), leading to the non-fulfillment of our primary website KPI, set at 10,000 unique visitors by the project's end.

Due to the change in the analytical tool, we present below the results obtained after the cookies policy change, collected by Matomo from May 2022 to March 2024.

- **Visits:**

The website had a total of **6210 visits**: 3,500 in the first period and 2,710 in the second. The charts in figure 10 show the number of visits per month and their origin. Regarding the users by country, 84% visited our website from Spain, Greece and Serbia. Concerning the regions, a significant part of the visitors was from Madrid (Spain), followed by "England" and Leinster (Ireland).

Figure 9: INCISIVE's webpage visits by month (from May 2022 to March 2024).

2,710 visits
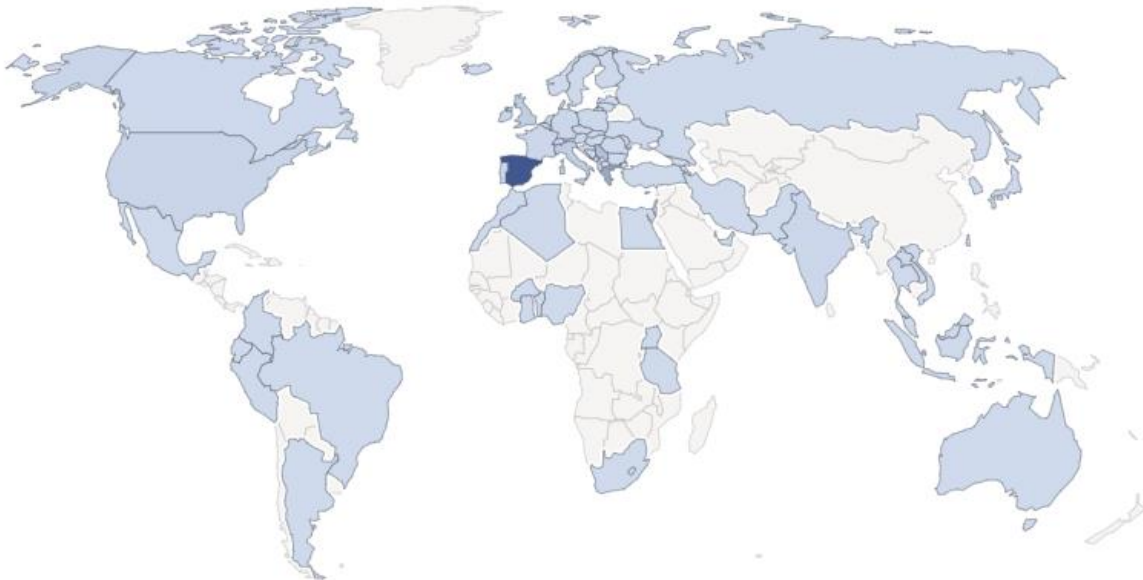
COUNTRY	▼ VISITS		REGION	▼ VISITS
Spain	1,478		Unknown	2,139
Greece	522		Madrid, Spain	532
Serbia	274		England, United Kingdom	129
United Kingdom	136		Leinster, Ireland	45
Italy	135		Vojvodina, Serbia	33
Cyprus	97		Campania, Italy	23
United States	51		Lazio, Italy	21
Ireland	46		Île-de-France, France	19
Belgium	45		Galicia, Spain	14
Netherlands	42		Luxembourg, Luxembo…	14

Figure 10: INCISIVE's webpage users by country and city of origin (from May 2022 to March 2024).

- **Average time:**

The average amount of time spent on a single page by all users of the website, also known as 'Average time', was **3 minutes and 46 seconds**.

According to Contentsquare's 2023 Digital Experience Benchmark Report, the average time on a web page across all industries is 69 seconds on Desktop and 34 seconds on mobile devices. In the

case of the INCISIVE website, 83% of users used desktop devices, and 15% their smartphones. Consequently, **the average time of the INCISIVE website has been excellent** considering the mentioned report as a reference.

Another way of measuring the user's interest in INCISIVE's website is the number of events by a user, e.g., the number of pages viewed, clicks, downloads, or even the scroll. In this case, the number of events by a user on INCISIVE's webpage was 3.1 in the second period.

- **Most viewed pages**

A total of **9,100 pages were viewed**. The most visited pages were the homepage, the news section and the landing page for the Madrid event.

- **Traffic acquisition**

The primary sources of traffic to INCISIVE's website consisted of direct entry (59%), organic search engine queries (22%), social media referrals (10%), and direct links from other websites (9%).

Figure 11: Screenshot of the INCISIVE website

2.3   Social media

Since the beginning of the project, INCISIVE has maintained a presence on two social media platforms: X (before Twitter) and LinkedIn. In April 2022, we launched our YouTube channel to coincide with the release of our initial results, following the guidance outlined in the project's Communication and Dissemination Plan.

Our social media content typically reflects current developments. This includes sharing news articles from the project's website, highlighting significant milestones, and promoting presentations at scientific conferences across the most convenient social media channels. Additionally, our social media presence serves to inform stakeholders about various project aspects, share related initiatives, and engage with external stakeholders.

The primary objectives of our social media content strategy have been:

- To inform and raise awareness about the project

- To engage the target audience

- To increase the number of followers on social media (thus, to increase our contacts' network)

- To generate traffic to the project's webpage

The table below summarize the results of each social network. We keep the results shared in the first and second Dissemination and Communication Activities reports (D.9.3, D.9.4), to show the evolution of the results at a glance. Additionally, we include some tweets to illustrate the content of some of the messages shared from the 16th of March 2023 to the 24th of March 2024.

- **X (before Twitter)**

Objective	INCISIVE X account is used to promote the project's news and related activities as well as reach a wide range of communities and establish connection and communication with the following: other related projects, health providers, academia and civil society, industry, media
Content and Messages	Project news, next generation eHealth, AI and Big data advancements, related news, discussion topics
Target Audience	All stakeholders
Set up	October 2020

![INCISIVE logo]

X	First C&D Activities Report (October 2020-15th March 2022)	Second C&D Activities Report (25 March 2022 – 15th March 2023	Final C&D Activities Report (16 March 2023 – 24th March 2024)	Accumulated results*
Followers	104	155	221	**+221**
Impressions	21.100	20.881	19.400	**+60.000**
Profile visits	7.158	9.211	Not available	**+ 25.000**
Retweets	51	116	164	**+330**
Likes	124	372	394	**+850**
Mentions	32	65	Not available	**+150**
Tweets	43	113	85	**+250**

Table 1: X objectives and results.
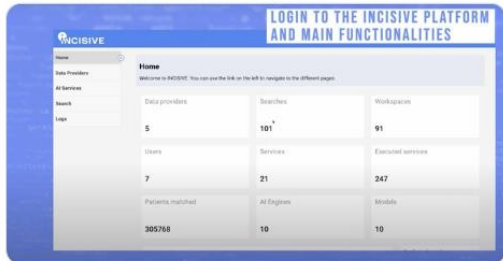
*Since X will be running until the project's end and beyond, the accumulated results are estimated.

Figure 12: Example of posts since the 16th March 2023.

- **LinkedIn:**

Objective	The INCISIVE Linkedin group is used to announce INCISIVE achievements to other professionals from relevant fields of action, to raise questions and obtain feedback that can contribute to the project's development; announce events and gather interest from other people that join our community
Content and Messages	Keep in contact and inform health providers and researchers
Target Audience	All stakeholders (mainly professional communities and researchers)
Set up	October 2021

	First C&D Activities Report (October 2020-15th March 2022)	Second C&D Activities Report (25 March 2022 – 15th March 2023)	Final C&D Activities Report (16 March 2023 – 24th March 2024)	Accumulated results*
Members	115	136	157	**+150**
Posts	18	20	16	**+60**
Likes	73	65	102	**+250**

Table 2: LinkedIn results. LinkedIn results.

*Since LinkedIn will be running until the project's end and beyond, the accumulated results are estimated.
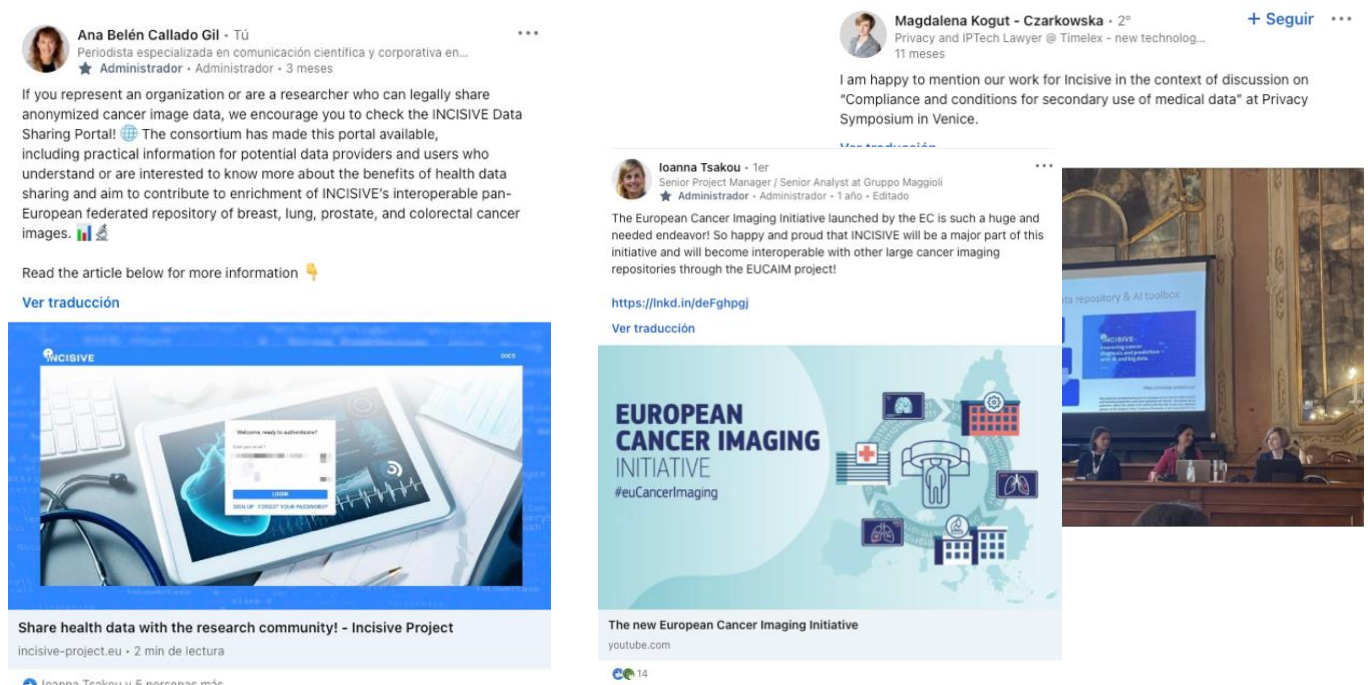
Figure 13: Example of LinkedIn posts since 16th March 2023.

- **YouTube:**

YOUTUBE	
Objective	The INCISIVE YouTube channel is used as a repository to promote the audiovisual content related to the project. It is also used for internal purposes (for instance, to share private demos)
Content and Messages	Promotional videos for the project concept and results
Target Audience	All stakeholders
Set up	April 2022

	First C&D Activities Report (October 2020-15th March 2022)	Second C&D Activities Report (25 March 2022 – 15th March 2023	Final C&D Activities Report (16 March 2023 – 24th March 2024)	Accumulated results*
Videos published	Not available	4	14	**18**
Views	Not available	46	416	**+450**
Subscribers	Not available	1	9	**+10**

Table 3: YouTube Results.

*Since YouTube will be running until the project's end and beyond, the accumulated results are estimated.

The 3rd of November 2023, the TIC Salut Social Foundation, responsible for managing WP9, suffered a cyberattack resulting in the complete deletion of all videos from INCISIVE's YouTube account. Although some videos were uploaded again indicating their original publication dates a few weeks later, the oldest videos were not reuploaded. Nevertheless, these videos remain accessible on X, as they were also shared there.
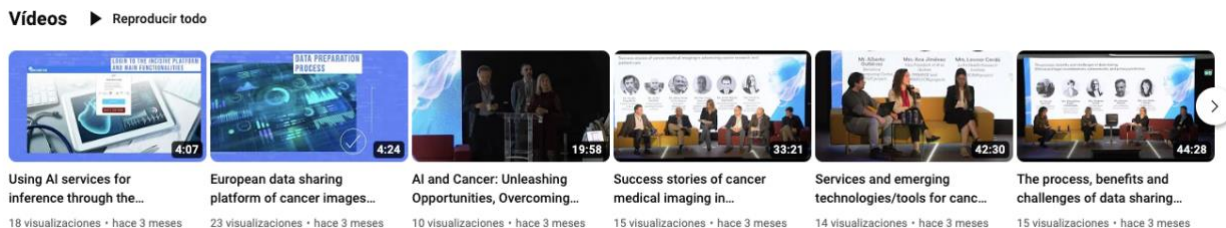
Figure 14: INCISIVE YouTube channel.

2.4   Leaflet

A leaflet with the project's key objectives and expected outcomes was designed and distributed to the partners. The brochure is available in the resources section of the website and **we have distributed more than 350 copies** in dissemination events during the project's lifespan.

2.5   Activity Report

The Activity Report is an internal excel document that contains all the C&D activities of the consortium. This document does not include the website's new articles and social media posts because they are already gathered on the INCISIVE's website and social media profiles.

Partners have been updating the Activity Report regularly. The document contains seven sheet tabs divided by the following categories: scientific papers, presentations, synergies, webinars, clustering events, external events, and other C&D activities (such as press releases and partners' news articles or tweets). All the results are shown in section 3 of this deliverable and the annexes.

2.6   Newsletter

The newsletter serves as an online communication tool, keeping all stakeholders informed about the project progress and findings while sustaining their interest. Upon visiting INCISIVE's website, new users encounter a pop-up message prompting them to subscribe to the newsletter. Additionally, a dedicated URL in the site's menu provides access to the subscription form. Besides promoting this link on social media platforms and encouraging partners to share the newsletter with their networks, we significantly increased the number of subscribers by adding the option to subscribe to our newsletter to the registration of the INCISIVE Madrid workshop event.

We sent out a total of 4 newsletters during the project, and expect to send a last one **after the project's end**:

- Newsletter 1: Improving cancer diagnosis and prediction with AI and big data (December 2021)

    o   Subscribers: 25

    o   Results: 54% open, 11 clicks

- Newsletter 2: INCISIVE launches its first interoperable cancer data repository prototype (July 2022)

    o Subscribers: 45

    o Results: 51% open, 17% clicks.

- Newsletter 3: The Horizon Results Platform offers information about our Repository of Cancer Images and Accompanying Clinical Data (December 2022).

    o Subscribers: 51

    o Results: 37% open, 8% clicks.

- Newsletter 4: Discover the prototype AI services offered through the INCISIVE platform (December 2023)

    o Subscribers: 280

    o Results: 19% open, 8% clicks.

INCISIVE — H2020-SC1-FA-DTS-2018-2020 / H2020-SC1-FA-DTS-2019-1 – GA number 9 **Figure 15: INCISIVE 4th newsletter.**

3   Communication and Dissemination activities

Throughout the project, we have encouraged INCISIVE partners to share information about the project on their respective communication channels, and to participate in dissemination and clustering activities. The following sub-points include all the C&D activities that the project and its partners have promoted during the analyzed period (from 16th March 2023 to 31th March 2024). Additionally, we present the compilation of the C&D activities in the annexes of this document.

3.1   Most impactful dissemination activities throughout the project

We have conducted a wide range of dissemination activities to share the project outcomes and progress with the main target stakeholders and audiences defined at the project's beginning and described in the D.9.2. Communication & Dissemination Plan. These are healthcare professionals, medical imaging data providers, the industry, the academic and research community, and European health policymakers and national agencies. Additionally, we have addressed messages to the secondary audiences defined in the same document: the general public, patient associations, NGOs supporting cancer patients and civil society, relevant European projects and major European and international associations and institutions of radiology.

In this chapter we would like to highlight seven C&D actions which had a notorious impact.

3.1.1. **'AI in Cancer: Unleashing Opportunities, Overcoming Challenges' workshop event**: Madrid, 7th of November, 2023. 240 professionals from more than 20 countries registered for this workshop event coorganized by INCISIVE, EUCAIM, and the AI4HI cluster, with the local support of Medtronic and TIC Salut Social Foundation. The workshop joined clinicians, researchers, AI developers, lawyers, innovation managers, and other professionals interested in oncology and AI working in hospitals, universities, research institutes, research infrastructures, and private companies. During the event, speakers and attendants jointly explored how AI powered by health data sharing can transform cancer challenges into remarkable opportunities.

INCISIVE's coordinator, Gianna Tsakou, stressed at the closure of the event that, after all the discussions regarding technologies, infrastructures, solutions on data interoperability, GDPR compliance, and many other topics, she hopes that "most of us will take advantage of the large amounts of existing knowledge, technologies and experiences to embrace data sharing and even to enhance it further." She also acknowledged that there will always be challenges and risks because sensitive

personal data are involved. Still, it is very much about taking the decision to share data after adopting appropriate risk mitigation measures, which is feasible, because eventually, as she said, "the benefits of data sharing are indeed much more than the challenges and difficulties."

EUCAIM's coordinator, Prof. Luis Martí-Bonmatí, agreed with Tsakou's comments and added that we have tools to integrate the results and continue the efforts of the AI4HI projects through the creation of the European federated infrastructure for cancer images. He recognized that this requires "a huge amount of effort, but we are able to do it and we are really in the right position to be heard by the European Commission, to be funded by the research projects, and to keep the lead in this integration effort."
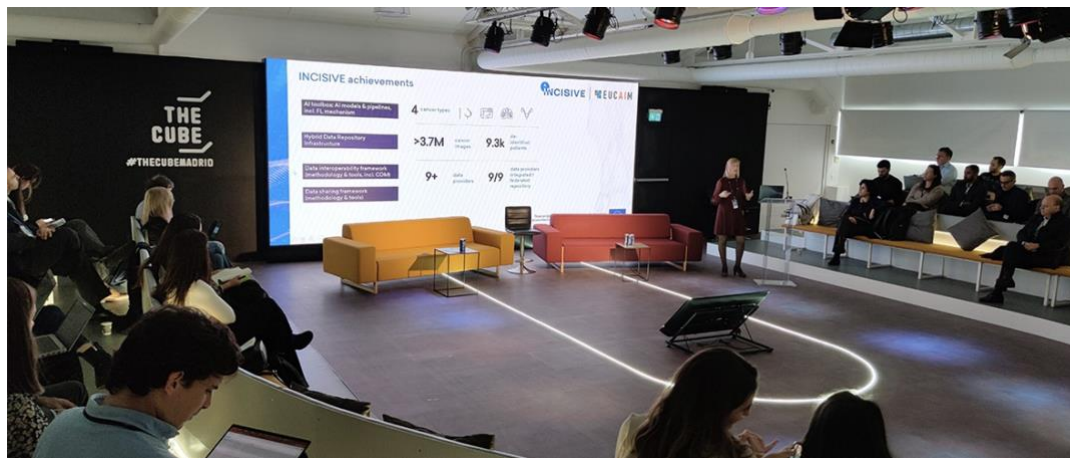
Figure 16: INCISIVE workshop event in Madrid.

3.1.2. **'Health data sharing and AI in cancer imaging – empowering AI-driven solutions for cancer diagnosis, treatment and follow-up' event**: Belgrade, 17th and 18th of November 2022. More than 60 healthcare practitioners and researchers from the field of oncology and AI joined this INCISIVE clustering event, co-organized by Visaris and the University of Novi Sad. The participants had the chance to discuss about the need of AI for cancer diagnosis, treatment, and follow-up and to deepen their knowledge about different aspects that were being considered within the INCISIVE project, such as the process of data sharing and its benefits, the legal framework and challenges involved, medical image (dicom) de-identification tools, and image annotation tools and guidelines, among others. The meeting was a great opportunity to raise awareness in the region about the solutions that the project will offer and

to receive feedback from professionals at the different INCISIVE workshops. The event also included sessions about other European-related initiatives clustered under the umbrella of the AI4HI cluster, EUCAIM, and a real-life AI Deployment case presented by Quibim.

Last but not least, the event had an impressive media coverage, appearing in several Serbian TV channels and newspapers.

Figure 17: INCISIVE event in Belgrade.

3.1.3. **European European Society of Radiology Conferences (ECR 2023 and ECR 2024).** The ECR is one of the largest medical meetings in Europe and the second-largest radiological meeting in the world. ECR attendees span all areas of the radiology arena including: radiology professionals, radiographers, physicists, industry representatives, and press reporters for both the medical and consumer press. INCISIVE has been present in the editions 2023 and 2024 with two workshops organized with the AI4HI cluster. In 2023, INCISIVE's coordinator, Gianna Tsakou, presented INCISIVE in the session 'Paving the way for a European infrastructure for AI for health imaging', and Maria Lelegianni from the Aristotle University of Thessaloniki participated in the session 'Advanced applications in breast imaging' with the talk 'Generation of a breast imaging repository and an AI breast imaging toolbox by INCISIVE'. In the following edition, Tsakou, participated in the EIBIR dedication session 'AI for health imaging: pioneering cancer image repositories for diagnosis and analysis', presenting the project's latest

outcomes.

Figure 18: AI4HI workshop at the ECR 2022, in Vienna.

Figure 19: AI4HI workshop at the ECR 2024, in Vienna.

3.1.4. '**Research to Reality – Digital Solution for European Challenges' event:** Brussels, 5th February, 2024. INCISIVE's coordinator, Gianna Tsakou, was one of the invited panelists by the European Commission for the session 'AI serving Healthcare', focused on how advanced digital tools, in particular data, AI, visualisation and new hardware, are benefiting patients, hospitals, intermediaries and governments.

The session was organized in the context of "Research to Reality – Digital Solution for European Challenges", a promising event under the Belgian Presidency in cooperation with the European Commission. The event explored the path from fundamental research to economic deployment of technological innovation. It seeked to stimulate the transformation of digital technologies developed under

Horizon Europe into impactful deployment initiatives such as those support by the Digital Europe Programme.

The event was attended by many policy-makers, as well as researchers, industry and many more stakeholders. During the panel meeting, Gianna shared experiences gained during INCISIVE's lifetime on ethical health data sharing and AI development. She also discussed how collaboration with the EUCAIM project is contributing to moving the project results from Research to Reality and full deployment.

3.1.5. **EC Workshops 'Landscaping data driven projects and initiatives in the cancer field – rationale and directions for better collaboration and integration':** online, 26th October, 15th November and 5th December, 2023. To increase the impact of EU support in the wider field of cancer research and innovation, EC services concerned invited relevant EU-funded cancer projects and infrastructures, to a series of three workshops aiming to take stock of available resources (data, tools, methodologies and services) from participating projects and initiatives; identify synergies, complementarities, and potential collaboration areas; identify common gap areas relating to available data types, harmonised ontologies, federation architecture, governance, secure and controlled access mechanisms etc.; decide on common priority areas for enhanced collaboration, and/or ned of additional support; tentatively explore how above issues can concretely be acted upon by project consortia, with the support of respective EU services as needed; establish a dialogue between projects and with Commission services; and communicate EU policy priorities and clarify concepts, e.g. concerning the on-going European Health Data Space (EHDS) and European Open Science Cloud (EOSC) initiatives (e.g. 'cancer data space') so that projects can align respective data efforts in an informed manner.

INCISIVE's coordinator, Gianna Tsakou, presented INCISIVE in these three workshops in which participated more than 80 key representatives of relevant EU-funded cancer projects. .

3.1.6. **Mini-symposium at the Annual International Conference of the IEEE Engineering in Medicine and Biology Society:** Sydney, 24th- 27th July, 2023. Representatives of the AI4HI cluster and EUCAIM organized a mini-symposium entitled 'The European Cancer Imaging Initiative – Status, Challenges and Opportunities'. The event

provided details on the achievements of the cluster in creating large interoperable cancer imaging repositories, and their experiences in developing novel AI-based models. It also offered hands-on experience on the use of the FUTURE-AI guidelines and reported on the challenges addressed by the EUCAIM project.

Figure 20: Annual International Conference of the IEEE Engineering in Medicine and Biology Society in Sydney.

The INCISIVE partner and head of AI at TIC Salut Social Foundation, Susanna Aussó, gave a lecture on Explainable AI in cancer imaging, focusing on the work carried out in this field in the INCISIVE project. She pointed out that "XAI plays a critical role in making AI models more transparent, trustworthy, and safe for all stakeholders involved in the healthcare ecosystem." Before giving examples of XAI in breast and lung cancer models developed for the INCISIVE project, she emphasized that XAI's implementation is an iterative process that should involve clinicians from the very beginning in the design phase, and that the definition of requirements must take into account multiple factors in clinical and technical areas. She also admitted that "although theoretical XAI requirements are well defined, its implementation is not easy because each model has its peculiarities". The event was an excellent opportunity to disseminate the cluster's joint efforts and foster networking with Asian and Australian audiences.

3.1.7.   **Publication 'Data infrastructures for AI in medical imaging: a report on the experiences of five EU projects'**. This paper published by the AI4HI cluster received the third highest number of article downloads in *European Radiology Experimental* in 2023. The manuscript summarizes different key points regarding the architecture, data models, GDPR considerations, and curation processes adopted by the five EU projects that are working collaboratively towards developing big data infrastructures based on European, ethical and GDPR compliant, quality-controlled, cancer-related, medical imaging, and related patient's data platforms, in which both large-scale data and AI algorithms will co-exist.

Figure 21: Certificate from the European Radiology Experimental Journal.

After describing the different approaches and solutions that the projects are currently deploying, the article focuses on their common challenges and gives recommendations based on their experiences on the following aspects: architecture design (centralized/federated/hybrid), data models and standards used (DICOM, OMOP-CDM/SNOMED-CT/HL7 FHIR, etc.), use of cloud-agnostic or cloud-dependent solutions, considerations on GDPR, consent versus patient information, accountability, data minimization, deidentification and curation processes.

Finally, it mentions the cluster's initiative to launch the EUCAIM project to further "harmonize practices, contribute to standards, ensure interoperability and in-fine, raise trust in data sharing, and advance in AI development in cancer imaging".

3.2 Publications

The publication of relevant scientific outputs in an academic context is one of INCISIVE's main targets. During the analyzed period, we published four articles in peer-reviewed journals and conference proceedings:

- **Kondylakis, H., Kalokyri, V., Sfakianakis, S., Marias, K., Tsiknakis, M., Jimenez-Pastor, A., Camacho-Ramos, E., Blanquer, I., Segrelles, J. D., López-Huguet, S., Barelle, C., Kogut-Czarkowska, M., Tsakou, G., Siopis, N., Sakellariou, Z., Bizopoulos, P., Drossou, V., Lalas, A., Votis, K., Mallol, P., … Lekadir, K. (2023). Data infrastructures for AI in medical imaging: a report on the experiences of five EU projects.** *European radiology experimental*, **7(1), 20. https://doi.org/10.1186/s41747-023-00336-x.** <u>Abstract:</u> Artificial intelligence (AI) is transforming the field of medical imaging and has the potential to bring medicine from the era of 'sick-care' to the era of healthcare and prevention. The development of AI requires access to large, complete, and harmonized real-world datasets, representative of the population, and disease diversity. However, to date, efforts are fragmented, based on single-institution, size-limited, and annotation-limited datasets. Available public datasets (e.g., The Cancer Imaging Archive, TCIA, USA) are limited in scope, making model generalizability really difficult. In this direction, five European Union projects are currently working on the development of big data infrastructures that will enable European, ethically and General Data Protection Regulation-compliant, quality-controlled, cancer-related, medical imaging platforms, in which both large-scale data and AI algorithms will coexist. The vision is to create sustainable AI cloud-based platforms for the development, implementation, verification, and validation of trustable, usable, and reliable AI models for addressing specific unmet needs regarding cancer care provision. In this paper, we present an overview of the development efforts highlighting challenges and approaches selected providing valuable feedback to future attempts in the area. <u>Impact factor</u>: 3.8

- **Hesso, I., Kayyali, R., Dolton, DR. et al. Cancer care at the time of the fourth industrial revolution: an insight to healthcare professionals' perspectives on cancer care and artificial intelligence.** *Radiat Oncol* **18, 167 (2023). https://doi.org/10.1186/s13014-023-02351-z.** <u>Abstract:</u> **Background:** The integration of Artificial Intelligence (AI) technology in cancer care has gained unprecedented global attention over the past few decades. This has impacted the way that cancer care is practiced and delivered across settings. The purpose of this study was to explore the perspectives and experiences of healthcare professionals (HCPs) on cancer treatment and the need for AI. This study is a part of the

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INCISIVE European Union H2020 project's development of user requirements, which aims to fully explore the potential of AI-based cancer imaging technologies. **Methods**: A mixed-methods research design was employed. HCPs participating in cancer care in the UK, Greece, Italy, Spain, Cyprus, and Serbia were first surveyed anonymously online. Twenty-seven HCPs then participated in semi-structured interviews. Appropriate statistical method was adopted to report the survey results by using SPSS. The interviews were audio recorded, verbatim transcribed, and then thematically analysed supported by NVIVO. **Results**: The survey drew responses from 95 HCPs. The occurrence of diagnostic delay was reported by 56% (n = 28/50) for breast cancer, 64% (n = 27/42) for lung cancer, 76% (n = 34/45) for colorectal cancer and 42% (n = 16/38) for prostate cancer. A proportion of participants reported the occurrence of false positives in the accuracy of the current imaging techniques used: 64% (n = 32/50) reported this for breast cancer, 60% (n = 25/42) for lung cancer, 51% (n = 23/45) for colorectal cancer and 45% (n = 17/38) for prostate cancer. All participants agreed that the use of technology would enhance the care pathway for cancer patients. Despite the positive perspectives toward AI, certain limitations were also recorded. The majority (73%) of respondents (n = 69/95) reported they had never utilised technology in the care pathway which necessitates the need for education and training in the qualitative finding; compared to 27% (n = 26/95) who had and were still using it. Most, 89% of respondents (n = 85/95) said they would be opened to providing AI-based services in the future to improve medical imaging for cancer care. Interviews with HCPs revealed lack of widespread preparedness for AI in oncology, several barriers to introducing AI, and a need for education and training. Provision of AI training, increasing public awareness of AI, using evidence-based technology, and developing AI based interventions that will not replace HCPs were some of the recommendations. **Conclusion**: HCPs reported favourable opinions of AI-based cancer imaging technologies and noted a number of care pathway concerns where AI can be useful. For the future design and execution of the INCISIVE project and other comparable AI-based projects, the characteristics and recommendations offered in the current research can serve as a reference. Impact factor: 3.8

- **Ariotta, V., Lehtonen, O., Salloum, S., Micoli, G., Lavikka, K., Rantanen, V., Hynninen, J., Virtanen, A., & Hautaniemi, S. (2023). H&E image analysis pipeline for quantifying morphological features.** *Journal of pathology informatics*, **14, 100339. https://doi.org/10.1016/j.jpi.2023.100339**. Abstract: Detecting cell types from histopathological images is essential for various digital pathology applications. However, large number of cells in whole-slide images (WSIs) necessitates automated analysis

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pipelines for efficient cell type detection. Herein, we present hematoxylin and eosin (H&E) Image Processing pipeline (HEIP) for automatied analysis of scanned H&E-stained slides. HEIP is a flexible and modular open-source software that performs preprocessing, instance segmentation, and nuclei feature extraction. To evaluate the performance of HEIP, we applied it to extract cell types from ovarian high-grade serous carcinoma (HGSC) patient WSIs. HEIP showed high precision in instance segmentation, particularly for neoplastic and epithelial cells. We also show that there is a significant correlation between genomic ploidy values and morphological features, such as major axis of the nucleus. Impact factor: 4.4

- **Hesso I, Kayyali R, Zacharias L, et al. Cancer care pathways across seven countries in Europe: What are the current obstacles? And how can artificial intelligence help?. *J Cancer Policy*. Published online November 25, 2023. doi:10.1016/j.jcpo.2023.100457.**
  Abstract: **Background**: Cancer poses significant challenges for healthcare professionals across the disease pathway including cancer imaging. This study constitutes part of the user requirement definition of INCISIVE EU project. The project has been designed to explore the full potential of artificial intelligence (AI)-based technologies in cancer imaging to streamline diagnosis and management. The study aimed to map cancer care pathways (breast, prostate, colorectal and lung cancers) across INCISIVE partner countries, and identify bottle necks within these pathways. **Methods**: Email interviews were conducted with ten oncology specialised healthcare professionals representing INCISIVE partner countries: Greece, Cyprus, Spain, Italy, Finland, the United Kingdom (UK) and Serbia. A purposive sampling strategy was employed for recruitment and data was collected between December 2020 and April 2021. Data was entered into Microsoft Excel spreadsheet to allow content examination and comparative analysis. **Results**: The analysed pathways all shared a common characteristic: inequalities in relation to delays in cancer diagnosis and treatment. All the studied countries, except the UK, lacked official national data about diagnostic and therapeutic delays. Furthermore, a considerable variation was noted regarding the availability of imaging and diagnostic services across the seven countries. Several concerns were also noted for inefficiencies/inequalities with regards to national screening for the four investigated cancer types. **Conclusions**: Delays in cancer diagnosis and treatment are an ongoing challenge and a source for inequalities. It is important to have systematic reporting of diagnostic and therapeutic delays in all countries to allow the proper estimation of its magnitude and support needed to address it. Our findings also support the orientation of the current policies towards early detection and wide scale adoption and implementation of cancer screening, through research,

innovation, and technology. Technologies involving AI can have a great potential to revolutionise cancer care delivery. <u>Impact factor</u>: 1.18

- **Kogut-Czarkowska, M. (2023). Anonymisation: The Trap for Biobanking (Part II). In: Colcelli, V., Cippitani, R., Brochhausen-Delius, C., Arnold, R. (eds) GDPR Requirements for Biobanking Activities Across Europe.** *Springer***, Cham. https://doi.org/10.1007/978-3-031-42944-6_4**. <u>Abstract:</u> The GDPR requires that the amount of personal data that is processed is minimised, incentivising data anonymisation. However, de-alienation between anonymised and pseudonymised medical data is not easy. This chapter explores these concepts in the light of the GDPR provisions, non-binding regulatory guidelines, and the relevant jurisprudence. It also examines the consequences of data anonymisation in the context of biobanking and biomedical research, and concludes that anonymisation should be carefully considered by taking account of the context and purpose of the research activity.

- **Bisquert A, Hmimou A, Berral JL, Gutierrez-Torre A, Romero O. HealthMesh: An Architectural Framework for Federated Healthcare Data Management.** *CEUR Workshop Proceedings***.** 26th International Workshop on Design, Optimization, Languages and Analytical Processing of Big Data, 2024. <u>Abstract</u>**:** Recently, significant milestones have been achieved in the field of healthcare data analysis. However, alongside these accomplishments, substantial data-related challenges have emerged in the domain of big data management. Modern healthcare projects are no more dealing with a single data repository but many heterogeneous ones and must overcome data variety, privacy and governance issues. Yet, current solutions face a privacy-decentralization trade-off. To address this dual challenge, we introduce HealthMesh, a novel layered architectural framework based on the Data Mesh principles, providing a domaindecentralised paradigm. In addition, the framework incorporates a Semantic Data Model which establishes robust governance, enables interoperability and guarantees policy compliance for all the data assets. To demonstrate the capabilities of the proposed approach, we provide an illustrative example inspired by the use case of the INCISIVE project for breast cancer analytics. Overall, this work makes a significant contribution on collecting key challenges, identifying actors and providing a set of components and guidelines for establishing a holistic framework for the complex field of healthcare data management.

In addition to the articles already published, we are currently undergoing review or participating in several publications together with the AI4HI cluster. The final title of each tentative publication may vary:

- **Trustworthy AI in medical imaging: Socio-ethical implications.** Chapter in a book that will be published by Springer, and led by Melanie Goisauf and Mónica Cano Abadía from EuCanImage.

- **Data modeling and standardization on a paneuropean federated repository of medical images and clinical data on cancer.** Led by Sara Alabart et al. from INCISIVE.

- **Towards ensuring data quality in cancer imaging repositories.** Led by Alexandra Kosvyra et al. from INCISIVE.

- **Lesion localization in mammography images.** Led by Milan Rapaic, Tatjana Loncar-Turukalo et al. from INCISIVE.

- **Documenting the De-identification Process of clinical and imaging data for the AI4HI projects**. Publication led by Haridimos Kondylakis et al. from the AI4HI cluster.

- **A thorough look on Preprocessing pipelines across AI4HI EC projects.** Led by Sara Haridimos and George Manikis et al. from the AI4HI cluster.

- **ELSI aspects in AI cancer imaging: lessons from the AIHI ELSI Group.** Led by Mikel Recuero et. al. from ProCancer-I.

- **Privacy in Deep Learning for Mammography.** Led by Richard Osuala et. from the EuCanImage project.

- **EuCanImage QA/QC.** Led by Michael Rutherford et al. from EuCanImage.

- **EuCanImage Data Ingestion Tool.** Led by Jonathan Bona et al. from EuCanImage.

- **Problems with OMOP adaptation in a European project.** Led by Pedro Mallol from CHAIMELEON.

- **Impact of preprocessing techniques (bias field correction and intensity normalization) on the prediction of prostate cancer aggressiveness.** Led by Aikaterini Dovrou from ProCAncer-I.

3.3 Events: presentations, synergies, and clustering events

INCISIVE partners engaged in various events aimed at enhancing the project's visibility, drawing stakeholders to the consortium, and disseminating our results. Additionally, they took part in meetings and activities of the Artificial Intelligence for Health Imaging (AI4HI) cluster.

- **Events**

Our partners presented or mentioned the project in the following scientific and technological events:

- o **The European Network for Cybersecurity (NeCS) PhD School**: Trento, 6th- 10th February, 2023 (this event was not included in D.9.4). The scope of the School is to present advances in both attacks and defenses in the realm of cybersecurity to junior researchers. Luigi Romano, INCISIVE partner from CeRICT, gave a lecture entitled 'Hardware-assisted Trusted Computing: State of The Art and Emerging Use Cases'. In particular, he focused on INCISIVE protection mechanisms for data "in use" based on Trusted Execution Environment technology. [More information](#)

- o **European Lung Cancer Conference:** Copenhagen, 29th March – 1st April, 2023. The ELCC is a collaborative effort of the most important multidisciplinary societies representing thoracic oncology specialists, working together to advance science, disseminate education and improve the practice of lung cancer specialists worldwide. Andreas Charalambous, INCISIVE partner and Associate Professor of Oncology and Palliative Care at the Cyprus University of Technology, made a presentation on Artificial Intelligence in Screening, based on the INCISIVE paper 'The Holistic Perspective of the INCISIVE Project—Artificial Intelligence in Screening Mammography'. [More information](#)

- o **ASLAN Awards:** Madrid, 22th March, 2023. Partners from TIC Salut Social Foundation presented the case of the INCISIVE project at the ASLAN Awards 2023. The nomination made it to the final and Susanna Aussó, head of AI at TIC Salut Social Foundation, attended the award ceremony in Madrid. [More information](#)

- o **Smart Health Awareness course**: Barcelona, 20th April, 2023. Students, representatives of the Catalan health system, the Health/AI Programme, Merck, IBM and the Engineering School at the University of Navarra-Tecnun, completed the first Smart Health Awareness Course on AI and big data. Didier Domínguez, INCISIVE partner and AI expert from TIC Salut Social Foundation, presented the project's challenges to more than 50 professionals of the Catalan Health System in the session 'Implementation of a federated AI network at European level: INCISIVE'.

- o **Privacy Symposium:** Venice, 27th April, 2023. The symposium aimed at supporting international dialogue, cooperation and knowledge-sharing on data protection,

compliance and emerging technologies. It provided a venue for data protection professionals, cybersecurity experts, authorities and researchers to meet and discuss the latest and upcoming developments in data protection, data regulations, and emerging technologies. INCISIVE legal partner from Timelex, Magdalena Kogut, mentioned the project in the 'Compliance and Conditions for Secondary Use of Medical Data' panel. More information

- **29th Scientific congress of Hellenic Medical Students**: Alexandroupolis, 7th May, 2023. Annual event in which thousands of students of Medicine and related Schools of Health Sciences and hundreds of Professors gather to familiarize themselves with the preparation and presentation of scientific papers, to meet renowned professors and their fellow students from all over Greece and abroad. Dr. Dimitris Nasikas, INCISIVE partner from the Hellenic Cancer Society, participated with the session 'The case of incisive platform: Artificial intelligence in breast cancer imaging as a tool for health care professionals'. More information

- **Summer School on Biomedical Data Science**: Gerakini 27th-30th June, 2023. INCISIVE partners from the Artistotle University of Thessaloniki, Alexandra Kosvyra and Maria Lelegianni, discussed with young students about practical experience, lessons learned and potential for next steps, in the session 'Generating a Data Repository for Cancer Research: the data provider and the technical perspective'.

- **European Association for Cancer Research Congress (EACR)**: Torino, 12th-15th June, 2023. This congress brings together thousands of cancer researchers in a four-day congress dedicated to basic, preclinical and translational cancer research across a wide breadth of topics. INCISIVE partners from the University of Helsinki shared a poster presentation about the advances of the project.

- **36th annual Congress of the European Association of Nuclear Medicine**: Vienna, 9th-13th September, 2023. The congress hosted numerous presentations and seminar sessions on specialized topics like radiopharmaceuticals, dosimetry and various types of therapy. The educational programme was complemented by several themed tracks, forums and practical workshops. Elizabeth Katherine Anna Triumbari, INCISIVE partner from the Università degli Studi di Roma "Tor Vergata", presented an e-poster about their participation in the retrospective and prospective phase of the study, where they collected, anonymized, annotated and uploaded lung cancer PET/CT imaging cases, as well as breast and colorectal cancer cases. More information

- o **European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases:** Torino, 22th September, 2023. Full-day workshop organized in the framework of the conference, with the goal to jointly explore how explainability and uncertainty can be leveraged to build robust and trustworthy AI systems. Dimitris Fotopoulos, INCISIVE partner from the Aristotle University of Thessaloniki, presented the collaborative work with Susanna Aussó and Didier Domínguez on XAI design, in the session 'Designing a Method to Identify Explainability Requirements in Cancer Research'. More information

- o **Training school of NET4AgeFriendly COST Action:** 26th- 28th September, 2023. Event promoted by the NET4AgeFriendly, which is an international interdisciplinary network on health and wellbeing in an age-friendly digital world, to promote social inclusion, independent living and active and healthy ageing in society. INCISIVE partners from the University of Novi Sad participated in a session summarizing the experiences in breast cancer screening from digital mammograms, gained through INCISIVE, presenting data curation and deep learning approaches used, and performances achieved. They also provided an overview of the project, with a special focus on the INCISIVE federated image repository. More information

- o **9th AI & Big data congress:** Barcelona, 27th- 28th September, 2023. Annual meeting point for professionals, suppliers and companies that want to develop or are carrying out projects in the field of AI & Data Analytics. The congress presented trends and best practices of pioneering companies, new technological developments and their application and success stories explained in detail. INCISIVE partners from the Barcelona Supercomputing Center – Centro Nacional de Computación presented their projects on AI, including some slides dedicated to INCISIVE, with a special focus on the technology developed by BSC for the project. More information

- o **PhD day at the University of Tor Vergata**: Rome, 29th September, 2023. Elizabeth Katherine Anna Triumbari, INCISIVE partner from the University of Tor Vergata, presented the project during the PhD Day, which was addressed to PhD students.

- o **European Researchers Night:** Novi Sad, 29th September, 2023. Event organized by the University of Novi Sad with the aim to promote research. INCISIVE partners from this university presented INCISIVE goals and experiences gained through the

project, as well achievements and challenges of the application of AI in medical imaging. More information

o **MEDICON 2023**: Sarajevo, 14th - 16th September, 2023. Medicon International staged its 8th annual conference on Advanced Clinical medicine addressing recent changes in the understanding and practice of various aspects of acute medicine. INCISIVE partners from the University of Novi Sad mentioned the project in the session 'Evaluation of deep learning techniques for automatic lesion segmentation in mammography images'. More information

o **European Congress on Gynaecological Oncology:** Istanbul, 28th September - 1st October, 2023. ESGO 2023 Congress was an educational experience, with scientific sessions featuring the latest medical and scientific developments in gynaecological cancers research, treatment and care delivered by prominent experts worldwide. INCISIVE partners from the University of Helsinki mentioned he project in a poster and an oral presentation. More information

o **AACR Special Conference - Advances in breast cancer research**: Boston, 19th – 22nd October, 2023. Meeting organized by the American Association for Cancer Research, in which INCISIVE partners from the University of Helsinki mentioned he project in a poster and an oral presentation. More information

o **ESMO 2023:** Madrid, 20th - 24th October, 2023. The congress worked towards the dissemination of the latest data, provided high quality education and excellent networking opportunities for oncologists and other stakeholders from all around the world. INCISIVE partners from the Kingston University presented results of the project in the poster 'Exploring Cancer Care Pathways in Seven European Countries: Identifying Obstacles and Opportunities for the role of Artificial Intelligence'. More information

o **International Conference of Medical Physics**: Mumbai, 5th- 9th December, 2023. The conference discussed all the issues pertaining to medical physics, medical radiation technology and radiation safety including recent innovations in the field. Prof. Ioannis Seimenis, INCISIVE partner from the National and Kapodistrian University of Athens, presented the poster 'Could textural analysis of MR images reduce overdiagnosis and overtreatment in prostate cancer?'. More information

o **Symposium of Innovation in Health Artificial Intelligence: Challenges and Opportunities:** Barcelona, 30th November, 2023. The objective of the event was to

raise awareness and motivate managers and professionals in the healthcare and social sector about the need to be prepared to lead and ensure the quality of clinical practice within their institutions with the emergence of AI. INCISIVE partner from IDIBAPS, Lourdes Mengual, presented INCISIVE in the session 'INCISIVE. Improvements in cancer diagnosis and prediction with AI and big data'. [More information](#)

- o **HL7 Europe Marathon:** Athens, 16th and 17th January, 2024. The event organized by HL7 Europe was embedded in the Athens Digital Health Week. Shulei Huang and Sara Alabart, INCISIVE interoperability experts from TIC Salut Social Foundation, participated in the Cancer Mission Track of the 35th virtual HL7 International FHIR Connectathon. They also presented the INCISIVE HL7 FHIR Implementation Guide and elaborated with all the participants the minimum common Logical Model taking into account all the projects presented. [More information](#)

- **Upcoming events:**

  - o **26th International Workshop on Design, Optimization, Languages and Analytical Processing of Big Data**: Paestum, 25th March, 2024. DOLAP 2024 aims at synergistically connecting the research community and industry practitioners and provides an international forum where both researchers and practitioners can share their findings in theoretical foundations, current methodologies, and practical experiences, and where industry technology developers can describe technical details about their products and companies. INCISIVE partners from the Barcelona SuperComputing Center -CNC will present the publication 'HealthMesh: An Architectural Framework for Federated Healthcare Data Management'.

  - o **International Symposium on Biomedical Imaging:** Athens, 27th - 30th May, 2024. The ISBI conference series is jointly organized by the IEEE Signal Processing Society and the IEEE Engineering in Medicine and Biology Society, and its top priority is to strengthen the synergy between researchers and experts from academia, healthcare organizations, research institutions, and industry towards advancing research and innovation in the field of biomedical imaging. Dimitris Filos, Dimitris Fotopoulos, Maria Anastasia Rouni and Ioanna Chouvarda, INCISIVE partners from the Aristotle University of Thessaloniki, will present project's results in the

communication 'Machine Learning-based whole gland radiomics analysis for prostate cancer classification'. More information

o **XVI Congresso Nazionale AIMN 2024:** Milano, 20th – 23rd June, 2024. This radiology event is an opportunity to enhance the discipline within the context of culturally closer sciences, but above all in the clinical placement of diagnostic and therapeutic procedures that characterize nuclear medicine. Elizabeth Katherine Anna Triumbari, INCISIVE partner from the University of Tor Vergata, will present INCISIVE results in a session. More information

- **Synergies and clustering events**

The AI4HI cluster is made up of five collaborative projects funded under the AI for Health Imaging action of the European Union's Horizon 2020 research and innovation program (CORDIS, 2023): INCISIVE, EuCanImage, ProCAncer-I, CHAIMELEON, and PRIMAGE. The cluster gathers over 100 institutions, from universities to companies, from all European regions and several non-EU partners.

A major step of the cluster was the **kick-off of the EUICAM project** (European Commission, 2023 - Reference 2), which is establishing and deploying a pan-European digital and federated infrastructure of FAIR pan-cancer anonymized images and provide a research platform for the development and benchmarking of AI tools toward precision medicine. The project builds upon the progress achieved by the cluster regarding system architecture, reference APIs, metadata, data structure and quality, legal requirements, and repositories. The details of this project, as well as a more detailed explanation of the clustering activities of INCISIVE can be found in D.9.5 Clustering Events Proceedings and Raising Awareness Campaigns Results V1 and D.9.7 Clustering Events Proceedings and Raising Awareness Campaigns Results V1.

The biggest contribution of INCISIVE to the clustering activities was the organization of the Madrid workshop event, which took place the 7th of November 2023. This event, which has been briefly explained in section 3.1 of this document, is thoroughly described in D.9.6. In addition to this workshop, INCISIVE partners participated in the following activities or initiatives related to the cluster since the 16th of March 2023:

o **European Society of Radiology:** Vienna, 29th February, 2023 (event described in section 3.1). The European Congress of Radiology (ECR) is one of the largest medical meetings in Europe and the second-largest radiological meeting in the world. INCISIVE's coordinator, Gianna Tsakou, presented INCISIVE in the session

'Paving the way for a European infrastructure for AI for health imaging', in which all AI4HI projects were also featured. Additionally, Maria Lelegianni from the Aristotle University of Thessaloniki participated in the session 'Advanced applications in breast imaging'. [More information](#)

o **45th Annual International Conference of the IEEE Engineering in Medicine & Biology Conference**: Sydney, 24th-27th July 2023 (event described in section 3.1). This conference dedicates itself to helping the biomedical engineering community achieve its goals, by gathering academics, clinicians, industry, students and researchers in the biomedical engineering and the Medtech community. This year's theme was 'Engineering Better and More Resilient Healthcare for All'. Representatives of the AI4HI cluster and the EUCAIM project organized the mini-symposium 'The European Cancer Imaging Initiative – Status, Challenges and Opportunities'. Susanna Aussó, from TIC Salut Social Foundation, participated on behalf of the INCISIVE project with a lecture on Explainable AI. [More information](#)

o **EC Workshops 'Landscaping data driven projects and initiatives in the cancer field – rationale and directions for better collaboration and integration':** online, 26th October, 15th November and 5th December, 2023 (event described in section 3.1). To increase the impact of EU support in the wider field of cancer research and innovation, EC services concerned invited relevant EU-funded cancer projects and infrastructures, to a series of three workshops: (1) Introduction and landscaping of data-driven projects in cancer, (2) Discussion on cancer data topics requiring coordination & support, (3) Reflection on future collaboration and support actions. INCISIVE's coordinator, Gianna Tsakou, presented INCISIVE in the three workshops.

o **IEEE Engineering in Medicine & Biology Society:** Malta, 7th-9th December, 2023. The ProCAncer-I Consortium organized a mini symposium under the scope of Data Engineering in Cancer. The conference aimed to highlight and discuss the challenges and opportunities of Data Science innovations in healthcare, medicine and biology, and how these innovations can be translated into cutting-edge healthcare and biomedical engineering curricula. Olga Tsave, INCISIVE partner from the Aristotle University of Thessaloniki, presented the session 'Data Validation in Cancer Imaging Repositories: The INCISIVE Approach'. [More information](#)

- o **8th Pan-Hellenic Congress of Oncological Imaging:** Athens, 15th December, 2023. The intended goal of the congress was the transfer of knowledge and experience while providing the opportunity for experienced doctors to answer the questions of younger colleagues. INCISIVE's coordinator, Gianna Tsakou, presented the INCISIVE and EUCAIM projects at the conference, where oncologists, radiologists, and other medical professionals were in attendance. The title of her presentation was 'Health Data-Sharing Big Data Repositories AI Services in Cancer Imaging'.

- o **Research to Reality - Digital Solutions to European Challenges:** Brussels, 5th February, 2024 (event described in section 3.1). INCISIVE's coordinator, Gianna Tsakou, was one of the invited panelists by the European Commission for the session 'AI serving Healthcare' focused on how advanced digital tools, in particular data, AI, visualisation and new hardware, are benefiting patients, hospitals, intermediaries and governments. [More information](#)

- o **Awareness event on INCISIVE and TRANSITION EU funded projects**: Cyprus, 27th February, 2024. The Cyprus University of Technology organized a hybrid event to delve into the INCISIVE and TRANSITION EU funded projects, exploring their impact and significance. The event aimed to foster dialogue and understanding around these innovative initiatives, driving forward progress and collaboration in our community. [More information](#)

- o **European Society of Radiology:** Vienna, 29th February, 2024. EIBIR hosted a dedicated session on the AI4HI cluster at the ECR 2024, entitled '**Artificial intelligence for health imaging - pioneering cancer image repositories for diagnosis and analysis'.** The session was chaired by EUCAIM's scientific coordinator, Luis Marti-Bonmati, and involved the CHAIMELEON, EuCanImage, INCISIVE, and ProCancer-I projects as well as outlooked in the integration of their project results into EUCAIM. INCISIVE's coordinator, Gianna Tsakou, presented 'INCISIVE: a federated data infrastructure enabling AI-supported cancer diagnosis and prediction'. [More information](#)

- o **Technology and clinical practice during the new era of Radiotherapeutic Oncology**: Athens, 2nd March, 2024. The Hellenic Cancer Society, in collaboration with the 2nd Radiation Oncology Clinic of the Metropolitan Hospital, organized the Scientific Conference 'Technology and clinical practice during the new era of Radiotherapeutic Oncology'. Dr. Dimitris Nasikas, INCISIVE partner from the

Hellenic Cancer Society, presented INCISIVE in the session 'AI and big data. HCS role in EUCAIM and INCISIVE'. [More information](#)

- o **13th Scientific Congress of the School of Medicine at Aristotle University of Thessaloniki:** Thessaloniki, 6th March 2024. As part of the congress, the AUTH team, led by Professor Chouvarda, organized a workshop entitled "Unveiling Advanced AI Models for Cancer Research using Pan-European repositories." During the workshop, the AUTH team presented the INCISIVE project and specifically the work conducted by AUTH. The workshop agenda included introductory presentations about INCISIVE and EUCAIM, the INCISIVE data repository, the radiomics analysis and machine learning applications in cancer research, and the INCISIVE platform, among others. [More information](#)

- **Upcoming clustering events:**

  - o **High-level Conference 'BEACON: Mobilising Collaboration among Stakeholders to Optimise the Growing Potential of Data for Tackling Cancer'.** Warsaw, 16th May, 2024. This event is a part of an EU funded project entitled 'CanHeal' as well as BEACON. The purpose of the meeting is to get key input from stakeholders as well as policy makers to ensure that the implementation of the EU beating Cancer plan meets their needs. A core objective of the stakeholder event is to assess and address obstacles to the integration to improve the capacity and capability of tackling cancer through public-private partnerships; to identify best practices and their added value; and to develop a policy roadmap to support funding so as to bring 'Access and Diagnostics for All' as well as improve the capacity of the Cancer center. INCISIVE's coordinator, Gianna Tsakou, will present an overview of the project as well as suggest a way forward on how the EU could incentivise such frameworks at the national and regional level.

3.4 News, articles, and press releases

The website's news section has been updated regularly with articles related to the project itself or its scope. We have published 15 articles from the 16th of March to the project's end, and expect to share a couple more in the following weeks:

- [INCISIVE partners meet in Barcelona for the 4th Plenary Meeting](#) (23rd February 2023)

- [How do INCISIVE's Advisory Board members assess the progress of the project?](#) (5th May 2023)

- [INCISIVE's lecture on Hardware-assisted Trusted Computing at the NeCS 2023](#) (22nd May 2023)

- [AI4HI projects shared in Australia their efforts toward building European cancer imaging repositories](#) (26th July 2023)

- [The AI4HI cluster publishes a position paper on data infrastructures for AI in medical imaging](#) (28th August 2023)

- [Recommendations of interoperability standards for projects managing clinical data and medical images: the INCISIVE case](#) (1st September 2023)

- [What will be the benefits of using the pan-European federated infrastructure for cancer images that EUCAIM is building?](#) (5th October 2023)

- [The European Cancer Imaging Initiative releases an informative explainer video](#) (19th October 2023)

- [Watch the video and presentations of the event 'AI and Cancer: Unleashing Opportunities, Overcoming Challenges'](#) (14th November 2023)

- [Share health data with the research community!](#) (1st December 2023)

- [Do you want to know more about the AI services offered through the INCISIVE platform?](#) (11th December 2023)

- [Join a competition to train and refine AI models for cancer research](#) (14th December 2023)

- [Seeking expert perspectives: survey to validate the identified business model and value proposition of INCISIVE's AI Toolbox](#) (22nd December 2023)

- [INCISIVE seeks support from hospitals to contribute to its hybrid repository of anonymized medical images](#) (7th February 2024)

- [INCISIVE insights inform discussion panel organized by the EC and the Belgian Presidency on AI serving Healthcare](#) (8th February 2024)

We also encouraged INCISIVE partners to disseminate project information through their communication channels, aiming for two primary objectives. Firstly, to concentrate on making the project results and evolution known among its target audiences, facilitating data collection activities, and participating in project surveys for requirements collection. Secondly, to create synergies with other EU and national initiatives and inform the research community. Besides the

contents listed below, WP9 will distribute a press release among all partners and encourage them to share it on their respective channels after the project's end.

- **Contents about or related to INCISIVE published on partners' websites, newsletters or social media (from 16th March 2023 to the project's end):**

  o Medtronic Spain (2023). X post. Save the date - Madrid event.

  o Barcelona SuperComputing Center – Centro Nacional de Computación (2023). X post. 4th Plenary Meeting

  o TIC Salut Social Foundation (2023). News article. Save the date: European conference on the opportunities and challenges of artificial intelligence in oncology

  o TIC Salut Social Foundation (2023). News article. New report with recommendations for interoperability standards for clinical data management and medical imaging projects

  o TIC Salut Social Foundation (2023). Event on the agenda. IEEE EMBC 2023

  o TIC Salut Social Foundation (2023). News article. More than 190 health professionals in Catalonia complete the Smart Health Awareness course on artificial intelligence and big data

  o TIC Salut Social Foundation - Salut/IA (2023). News article. More than 190 health professionals in Catalonia complete the Smart Health Awareness course on artificial intelligence and big data

  o TIC Salut Social Foundation (2023). Newsletter. September newsletter.

  o TIC Salut Social Foundation (2023). Newsletter. October newsletter.

  o TIC Salut Social Foundation (2023). X post. Madrid event.

  o TIC Salut Social Foundation (2023). X post. Save the date - Madrid event.

  o TIC Salut Social Foundation (2023). LinkedIn post. Save the date - Madrid event.

  o TIC Salut Social Foundation (2023). X post. Save the date - Madrid event with video.

  o TIC Salut Social Foundation (2023). X post Cancer World Day.

  o TIC Salut Social Foundation (2023). X post. Interoperability standards.

- o TIC Salut Social Foundation (2023). LinkedIn post. Interoperability standards.

- o TIC Salut Social Foundation (2023). X post. EMBC 2023

- o TIC Salut Social Foundation (2023). X post. Smart Health Awareness course.

- o TIC Salut Social Foundation (2023). X post. Aslan awards.

- o Timelex (2023). European Health Data Space: The Debate Continues

- o White Research (2023). LinkedIn post. Join for the 'AI and Cancer: Unleashing Opportunities, Overcoming Challenges' event!

- o White Research (2023). X post. Madrid event save the date

- o White Research (2023). X post. 4th Plenary Meeting

- **Specific page or mention to the project on partners' websites:**
  - o Barcelona Supercomputing Center

  - o CER ICT

  - o Cyprus Association of Cancer Patients and Friends

  - o European Dynamics

  - o Gruppo Magglioli

  - o Hellenic Cancer Society

  - o National and Kapodistrian University of Athens

  - o Thridium - The commercial name for Telesto IoT Solutions Limited

  - o TIC Salut Social Foundation

  - o Timelex

  - o University of Helsinki

  - o University of Novi Sad

  - o Visaris

  - o White Research

4 Monitoring and evaluation

As we outlined in the C&D Plan and detailed in deliverables D.9.3 and D.9.4, we have consistently used a combination of criteria and feedback mechanisms to assess the efficacy of each action throughout the project. We have also kept a comprehensive record of all undertaken activities and documented them in the corresponding deliverables.

We present in this section the final status of the project's expected Key Performance Indicators (KPIs), considering the actions and outcomes described in deliverables D.9.3, D.9.4, and D.9.6. Additionally, we offer an overview of the audience reached with all the activities, following the categories stipulated by the European Commission for the project's internal reports.

4.1 KPIs monitored in the project

We have regularly monitored the KPIs compiled in this deliverable to evaluate the results of the communication activities. Constant monitoring has allowed us making adaptations and readjustments in our actions to achieve the KPIs described in the project's protocol and the C&D Plan.

Indicator	Description
Website	Users, returning visitors, users by country and city, average time, most viewed pages, traffic sources.
Social Media	Twitter: Followers, impressions, profile visits, retweets, likes, mentions, tweets. LinkedIn group: members, posts, likes.
Scientific publications	Number, type, Journal impact factor for peer reviewed publications.
Newsletters	Number of newsletters, subscribers, opens, clicks.
Presentations, synergies, and clustering events	Conference contributions, presentations in international industrial events, external events and conferences, synergies with major initiatives and networks, workshops and webinars.
Leaflets	Number of materials developed, number of leaflets distributed at events.
Press releases	Number of press releases.
News articles	Number of news articles published in the consortium website, number of news articles and information about the project published in partners' websites.

Media impacts	Number of impacts.

Table 4: C&D indicators.

4.2 Final results of the project

In the following table we present the expected values for **C&D KPIs** and the results obtained. These values were described in the project's protocol and the C&D plan, and we added new indicators in the 3rd Plenary Meeting, in October 2022. Please note that some events are placed in different categories (for instance, we had a booth at the Mobile World Congress, where we made presentations about the project).

Category	KPI	Value expected	Final results	Comments
Website	Number of visits at the project website	**> 10.000 visitors**	6.200 visitors	Not achieved due to the change in the cookies policy (see section 2.2)
	Average time	**>1 min**	3 min 46s sec	Achieved. We have surpassed the KPI by a wide margin.
Social Media	Followers on X	**>200**	221	Achieved. We also want to highlight the quality of our followers, who are mainly professionals and institutions working in cancer research, AI and big data.
	Twitter impressions	**>50.000**	+60.000	Achieved.
	Members on LinkedIn	**>150**	+150	Achieved with a community mainly working in cancer research, AI and big data.
Scientific publications	Number of scientific papers published	**> 35 peer-reviewed scientific publications**	23 published 12 under preparation	Not achieved yet. We will reach the number of publications after the project's end since several papers are still being reviewed, and many others are in earlier stages.
Presentations, synergies, and	Conference contributions	**> 10 conference contributions**	+65	Achieved. We have surpassed the KPI by a wide margin, including all the events in which INCISIVE

clustering events				partners have presented the project and/or its results.
Presentations in international industrial events	**Presentations of results at least in 10 international events**	12		Achieved.
External events and conferences	**> 12 events/year** **> 3 booth participations in conferences**	2021: 15 2022: 21 2023: 26 2024: 6 3 booth in conferences		Achieved.
Synergies with major initiatives and networks.	**10 joint actions**	19		Achieved. Most of the synergies were created in joint events coorganized with the AI4HI cluster.
INCISIVE clustering events	**2 clustering events with the participation of at least 15 research initiatives**	13		Achieved thanks to the joint events coorganized with the AI4HI cluster.
1 workshop on pan-European health imaging repository	**Targeting 100 participants**	1		Achieved with the hybrid session 'Cancer medical imaging repositories and their importance in research and clinical practice', that took place during the workshop event in Madrid.
1 final workshop	**Targeting 100 participants**	1		Achieved with the workshop event ''AI and Cancer: Unleashing Opportunities, Overcoming Challenges' that took place in Madrid.
INCISIVE AI toolbox demonstrations webinars	**>3 webinars**	+4		Achieved.

Newsletters	Subscribers	**>100**	280	Significantly achieved with a community working in cancer research, AI and big data.
Leaflets	Number of leaflets distributed	**>100**	+350	Achieved.
Press releases	Number of press releases	**3**	2	After the project's end we will distribute a press release with the results, so we will achieve this KPI.
News articles	Number of articles on the project's webpage	**>40**	47	Achieved. We intend to publish additional articles after the conclusion of the project, including the press release.
Media impacts	Number of articles published in the media	**>10**	11	Achieved. We expect to have more media impacts with the final press release.
Other	Pan-European health imaging repository members	**> 40 members (data providers)**	16	Not achieved yet. We have started circulating the Letter of Intent for entities external to our consortium to become contributors to the INCISIVE Hybrid Repository recently, so we hope to increase this number after the project's end.
	Develop INCISIVE health professionals / industrial stakeholders' database	**> 300 contacts**	+300	Achieved. We have an extensive network of professionals and stakeholders that have participated with us in the C&D activities described in this document. We also have the list of recipients of our newsletter, with almost 300 subscribers.

Table 5: C&D expected KPIs and final results.

- **Summary of estimated number of persons reached**

Table 6 shows the estimated number of people reached during the project, in the context of all C&D activities, following the categories established for the project's regular report to the European Commission.

Categories	Audience reached
Scientific Community (Higher Education, Research)	**+20.000** (participation in more than 65 scientific events)
Industry	**+1.500** (participation in conferences, workshops, visitors in partners' websites, etc.)
General Public	**+100.000** (more than 60.000 impressions on social media, 6.000 visitors on the website, audience from the media and from partner's websites, etc.)
Policy makers	**+200** (from more than 15 EU institutions, national and local authorities participating in clustering events, workshops, etc.)
Media	**+100.000** (from 9 impacts on the media)
Investors	Not applicable
Customers	Not applicable
Other	-

Table 6: Summary of estimated people reached.

5   Conclusions

The overall assessment of the C&D activities undertaken throughout the project is very positive: **we successfully developed effective communication tools** about the project and **conducted a wide range of C&D activities** aimed at fostering general awareness and disseminating the project's outcomes.

The **involvement of INCISIVE partners in C&D activities has been excellent.** They have made significant contributions to WP9 by publishing scientific articles in peer-review journals and conferences, actively participating in external events, sharing project-related content through various channels including websites and social media, and utilizing project materials properly. Their provision of valuable insights and feedback to WP9 has also been crucial.

Simultaneously, we have consistently **nourished the project's website** and associated portals with high-quality content. We have also established a dynamic network of professionals in our field through strategic use of social media, mailing lists, events, and meetings.

Additionally, we would like to emphasise the important role that the **AI4HI cluster** has played in our project's C&D activities, serving as a **vital platform for expanding our reach and knowledge** base. Several events linked to this cluster, including our flagship workshop event 'AI and Cancer: Unleashing Opportunities, Overcoming Challenges', have directly been originated from INCISIVE. The extensive communication campaign that we conducted for this event resulted in the registration of over 240 professionals, spanning clinicians, researchers, AI developers, lawyers, and innovation managers from more than 20 countries, all deeply interested in the field of oncology and AI.

In summary, we firmly believe that all the efforts undertaken in this project have been effectively disseminated. We trust that this wealth of knowledge will persistently expand through initiatives such as the **EUCAIM** project and other potential projects, **benefiting future research** aimed at improving cancer diagnosis and prediction using artificial intelligence and big data.

ANNEX 1. List of publications

Publication	Partner	Year of publication	More information
Berral JL, Aranda O, Dominguez JL, Torres J. Distributing Deep Learning Hyperparameter Tuning for 3D Medical Image Segmentation. IPDPS 36th IEEE International Parallel & Distributed Processing Symposium, Workshop on Scalable Deep Learning (ScaDL)- IEEE Xplore. 2021 Oct (Pre-print).	INCISIVE	2021	D.9.3.
Kogut-Czarkowska, M. Pseudonymization and anonymization of personal data in scientific research projects. Prawo Nowych Technologii. July 2021.	INCISIVE	2021	D.9.3.
Kosvyra A, Filos D, Fotopoulos D, Olga T and Chouvarda I. Towards Data Integration for AI in Cancer Research. 43rd Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC)Oct 31 - Nov 4, 2021. Virtual Conference	INCISIVE	2021	D.9.3.
Prvulovic Bunovic N, Sveljo O, Kozic D, Boban J. Is Elevated Choline on Magnetic Resonance Spectroscopy a Reliable Marker of Breast Lesion Malignancy? Front Oncol. 2021 Sep 10;11:610354. doi: 10.3389/fonc.2021.610354. PMID: 34567998; PMCID: PMC8462297.	INCISIVE	2021	D.9.3.
Jamalzadeh S, Häkkinen A, Andersson N, Huhtinen K, Laury A, Hietanen S, Hynninen J, Oikkonen J, Carpén O, Virtanen A, Hautaniemi S. QuantISH: RNA in situ hybridization image analysis framework for quantifying cell type-specific target RNA expression and variability. Lab Invest. 2022 Feb 15. doi: 10.1038/s41374-022-00743-5. Epub ahead of print. PMID: 35169222.	INCISIVE	2022	D.9.3.
Ntzioni E, Chouvarda I. Combining Machine Learning and Network Analysis Pipelines: The Case of Microbiome and Metabolomics Data in Colorectal Cancer. Stud Health Technol Inform. 2022 Jan 14;289:489-490. doi: 10.3233/SHTI210965. PMID: 35062198.	INCISIVE	2022	D.9.3.
Protonotarios NE, Katsamenis I, Sykiotis S, Dikaios N, Kastis GA, Chatziioannou SN, Metaxas M, Doulamis N, Doulamis A. A few-shot U-Net deep learning model for lung cancer lesion segmentation via PET/CT imaging. Biomed Phys Eng Express. 2022 Feb 18;8(2). doi: 10.1088/2057-1976/ac53bd. PMID: 35144242.	INCISIVE	2022	D.9.3.

Stalika E, Gavrilaki K, Koziokos I, Chouvarda I, Lavdaniti M. CN9 Mapping the Functional Assessment of Cancer Therapy (FACT-G) in Greek patients with neoplasm: An interplay of statistical and bioinformatics approach. Annals of Oncology, Volume 33, S1354 - S1355. DOI: https://doi.org/10.1016/j.annonc.2022.07.319	INCISIVE	2022	D.9.4.
Hesso I, Kayyali R, Charalambous A, Lavdaniti M, Stalika E, Lelegianni M, Nabhani-Gebara S. Experiences of cancer survivors in Europe: Has anything changed? Can artificial intelligence offer a solution? Front Oncol. 2022 Sep 14;12:888938. DOI: 10.3389/fonc.2022.888938. PMID: 36185207; PMCID: PMC9515410.	INCISIVE	2022	D.9.4.
Marti-Bonmati L, Koh DM, Riklund K. et al. Considerations for artificial intelligence clinical impact in oncologic imaging: an AI4HI position paper. Insights Imaging 13, 89 (2022). DOI: https://doi.org/10.1186/s13244-022-01220-9	INCISIVE	2022	D.9.4.
Kondylakis H, Ciarrocchi E, Cerda-Alberich L, Chouvarda I, Fromont LA, Garcia-Aznar JM, Kalokyri V, Kosvyra A, Walker D, Yang G, Neri E; the AI4HealthImaging Working Group on metadata models**. Position of the AI for Health Imaging (AI4HI) network on metadata models for imaging biobanks. *Eur Radiol Exp*. 2022 Jul 1;6(1):29. doi: 10.1186/s41747-022-00281-1. PMID: 35773546; PMCID: PMC9247122.	INCISIVE	2022	D.9.4.
Lazic I, Agullo F, Ausso S, Alves B, Barelle C, Berral JL, Bizopoulos P, Bunduc O, Chouvarda I, Dominguez D, Filos D, Gutierrez-Torre A, Hesso I, Jakovljević N, Kayyali R, Kogut-Czarkowska M, Kosvyra A, Lalas A, Lavdaniti M, Loncar-Turukalo T, Martinez-Alabart S, Michas N, Nabhani-Gebara S, Raptopoulos A, Roussakis Y, Stalika E, Symvoulidis C, Tsave O, Votis K, Charalambous A. The Holistic Perspective of the INCISIVE Project—Artificial Intelligence in Screening Mammography. Appl. Sci. 2022, 12, 8755. DOI: https://doi.org/10.3390/app12178755	INCISIVE	2022	D.9.4.
Lazic I, Jakovljevic N, Boban J, Nosek I, Loncar-Turukalo T. Information extraction from clinical records: an example for breast cancer. 2022 *IEEE 21st Mediterranean Electrotechnical Conference (MELECON)*, 2022, pp. 942-947. DOI: 10.1109/MELECON53508.2022.9842995	INCISIVE	2022	D.9.4.
Kosvyra D, Filos D, Fotopoulos D, Tsave O, Chouvarda I. Data Quality Check in Cancer Imaging Research: Deploying and Evaluating the DIQCT Tool, 2022 *44th Annual International*	INCISIVE	2022	D.9.4.

Conference of the IEEE Engineering in Medicine & Biology Society (EMBC), 2022, pp. 1053-1057. DOI: 10.1109/EMBC48229.2022.9871018.			
Sykiotis S, Tzortzis I, Angeli A, Doulamis N, and Kalogeras D. A deep-learning based diagnostic framework for Breast Cancer. *In Proceedings of the 15th International Conference on PErvasive Technologies Related to Assistive Environments (PETRA '22)*. Association for Computing Machinery, New York, NY, pages 641-645. 2023. DOI: https://doi.org/10.1145/3529190.3534769	INCISIVE	2023	D.9.4.
Fotopoulos, D, Filos D, Xinou E, and Chouvarda I. Towards Lung Cancer Staging via Multipositional Radiomics and Machine Learning. In Proceedings of the 16th International Joint Conference on Biomedical Engineering Systems and Technologies - Volume 4: *BIOSIGNALS*, ISBN 978-989-758-631-6, pages 317-324. 2023. doi: 10.5220/0011781500003414	INCISIVE	2023	D.9.4.
Kondylakis, H., Kalokyri, V., Sfakianakis, S., Marias, K., Tsiknakis, M., Jimenez-Pastor, A., Camacho-Ramos, E., Blanquer, I., Segrelles, J. D., López-Huguet, S., Barelle, C., Kogut-Czarkowska, M., Tsakou, G., Siopis, N., Sakellariou, Z., Bizopoulos, P., Drossou, V., Lalas, A., Votis, K., Mallol, P., … Lekadir, K. (2023). Data infrastructures for AI in medical imaging: a report on the experiences of five EU projects. *European radiology experimental*, 7(1), 20. https://doi.org/10.1186/s41747-023-00336-x	AI4HI	2023	D.9.6
Hesso, I., Kayyali, R., Dolton, DR. et al. Cancer care at the time of the fourth industrial revolution: an insight to healthcare professionals' perspectives on cancer care and artificial intelligence. *Radiat Oncol* 18, 167 (2023).	INCISIVE	2023	D.9.6
Ariotta, V., Lehtonen, O., Salloum, S., Micoli, G., Lavikka, K., Rantanen, V., Hynninen, J., Virtanen, A., & Hautaniemi, S. (2023). H&E image analysis pipeline for quantifying morphological features. *Journal of pathology informatics,* 14, 100339. https://doi.org/10.1016/j.jpi.2023.100339	INCISIVE	2023	D.9.6
Hesso I, Kayyali R, Zacharias L, et al. Cancer care pathways across seven countries in Europe: What are the current obstacles? And how can artificial intelligence help?. *J Cancer Policy*. Published online November 25, 2023. doi:10.1016/j.jcpo.2023.100457	INCISIVE	2023	D.9.6
Kogut-Czarkowska, M. (2023). Anonymisation: The Trap for Biobanking (Part II). In: Colcelli, V., Cippitani, R., Brochhausen-Delius, C., Arnold, R. (eds) GDPR Requirements for Biobanking	INCISIVE	2023	D.9.6

Activities Across Europe. Springer, Cham. https://doi.org/10.1007/978-3-031-42944-6_4			
Bisquert A, Hmimou A, Berral JL, Gutierrez-Torre A, Romero O. HealthMesh: An Architectural Framework for Federated Healthcare Data Management. *CEUR Workshop Proceedings*. 26th International Workshop on Design, Optimization, Languages and Analytical Processing of Big Data, 2024.	INCISIVE	2024	D.9.6

ANNEX 2. List of events

Event	Location	Date	More information
26th ACM SIGKDD conference on knowledge discovery and data mining (KDD 2020)	Online	August 14-18, 2020	D.9.3
Workshop of BENEFIT ERASMUS+ KA2 Capacity Building Program	Online	January 28, 2021	D.9.3
Reinforce AI conference powered by Ericsson	Online	March 3-5, 2021	D.9.3
European Lung Cancer Virtual Congress 2021 – ESMO	Online	March 25-27, 2021	D.9.3
Italian Conference on CyberSecurity (ITASEC)	Online	April 7-9, 2021	D.9.3
NVIDIA GTC	Online	April 12-16, 2021	D.9.3
International Symposium on Biomedical Imaging (IEEE ISBI)	Online	April 13-16, 2021	D.9.3
Ai4 2021 Healthcare Summit	Online	May 5-6, 2021	D.9.3
10th Scientific Conference of A.U.Th School of Medicine	Online	May 13-15, 2021	D.9.3
35th IEEE International Parallel & Distributed Processing Symposium	Online	May 17-21, 2021	D.9.3
Intelligent Health AI	Online	May 11, 2021	D.9.3
31th Medical Informatics Europe (MIE)	Online	May 29-31, 2021	D.9.3
IEEE-EMBS International Conference on Biomedical and Health Informatics (BHI'21), jointly organised with the 4th IEEE International Workshop on Smart IoT Sensors & Social Systems for eHealth & Well-Being Applications	Online	June 16-18, and July 27, 2021	D.9.3
International Conference on Public Health Informatics Management ICPHIM 2021	Helsinki, Finland	July 19-20, 2021.	D.9.3
Big data and artificial intelligence in cancer imaging	Online	July 27, 2021	D.9.3
INCISIVE's DICOM deidentification approach and tools used in the project	Online	July 28, 2021	D.9.3
7th edition AI Big data congress Barcelona	Barcelona, Spain	September 14, 2021	D.9.3

ESMO annual congress	Online	September 16-21, 2021	D.9.3
GITEX Global	Dubai, United Arab Emirates	October 17, 2021	D.9.3
EuCanImage webinar	Online	November 17, 2021	D.9.3
Webinar for the eHealth Stakeholder Group on the Cancer Imaging Initiative	Online	January 12, 2022	D.9.3
Mobile World Congress	Barcelona, Spain	February 28- March 3, 2022	D.9.3
National Authority for Electronic Health and PASYKAF signed a Memorandum of Cooperation	Online	March 3, 2022	D.9.3
Cyprus Patients' Associations Federation (OASAK) and PASYKAF meeting	Online	March 4, 2022	D.9.3
15th Annual Panhellenic Scientific and Professional Conference	Chania, Greece	March 12-15, 2022	D.9.4
Pilot event for the Annual Conference of students of biomedical sciences, University of Novi Sad Serbia	Novi Sad, Serbia	March, 19, 2022	D.9.3
European Lung Cancer Conference	Prague, Czech Republic	March 30 – April 2, 2022	D.9.4
Privacy symposium	Venice, Italy	April 5-7, 2022	D.9.4
Conference 'Les dades de salut a Catalunya	Barcelona, Spain	April 22, 2022	D.9.4
The MedTech Forum	Barcelona, Spain	May 3-5, 2022	D.9.4
ESBB Coffee break seminar 'The trap of the anonymization"	Online	May 12, 2022	D.9.4
Webinar 'Deploying FHIR: How to co-engage public and private players?'	Online	May 12, 2022	D.9.4
Oncology Professional Care	London, UK	May 24-15, 2022	D.9.4
IEEE MELECON	Palermo, Italy	June 14-16, 2022	D.9.4
International Conference on Computational Science	Online	June 16-18, 2022	D.9.3
Kingston University Festival of Research	London, UK	June 28, 2022	D.9.4

44th International Engineering in Medicine and Biology Conference	Glasgow, Scotland	July 11-15, 2022	D.9.4
European Society of Radiology Congress	Vienna, Austrian	July 13-17, 2022	D.9.4
ESMO Congress	Paris, France	September 9-15, 2022	D.9.4
Women Evolution Congress	Sant Cugat, Barcelona, Spain	October 6, 2022	D.9.4
19th International Conference on Informatics, Management, and Technology in Healthcare (ICIMTH 2021)	Online	October 16-17, 2022	D.9.3
International Conference Learning and implementing social innovation	Coimbra, Portugal	November 8-9, 2022	D.9.4
Seminar 'Health Research: European Health Data Space challenges'	Valencia, Spain	November 16, 2022	D.9.4
INCISIVE event 'Health data sharing and AI in cancer imaging'	Belgrade, Serbia	November 17-18, 2022	D.9.4
Webinar 'Obstacles and avenues for data sharing and AI in cancer imaging'	Online	November 17, 2022	D.9.4
The European Network for Cybersecurity (NeCS) PhD School	Trento, Italy	6th- 10th February, 2023	D.9.6
Mobile World Congress	Barcelona, Spain	February 28- March 2, 2023	D.9.4
Smart Health Awareness Course	Barcelona, Spain	March 7, 2023	D.9.4
ASLAN Awards	Madrid, Spain	March 22, 2023	D.9.4
European Lung Cancer Congress	Copenhagen, Denmark	March 29 – April 1, 2023	D.9.4
European Congress of Radiology	Vienna, Austrian	March 1-5, 2023	D.9.4
Smart Health Awareness course	Barcelona, Spain	20th April, 2023	D.9.6
Privacy Symposium	Venice, Italy	27th April, 2023	D.9.6

29th Scientific congress of Hellenic Medical Students	Alexandroupolis, Greece	7th May, 2023	D.9.6
Summer School on Biomedical Data Science	Gerakini, Greece	27th-30th June, 2023	D.9.6
European Association for Cancer Research Congress (EACR)	Torino, Italy	12th-15th June, 2023	D.9.6
45th Annual International Conference of the IEEE Engineering in Medicine & Biology Conference	Sydney, Australia	July 24-28, 2023	D.9.4
36th annual Congress of the European Association of Nuclear Medicine	Vienna, Austrian	9th-13th September, 2023	D.9.6
European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases	Torino, Italy	22th September, 2023	D.9.6
Training school of NET4AgeFriendly COST Action	Skopje, Republic of North Macedonia	26th- 28th September, 2023	D.9.6
IEEE-EMBS BHI	Ioannina, Greece	September 27-29, 2023	D.9.4
9th AI & Big data congress	Barcelona, Spain	27th- 28th September, 2023	D.9.6
PhD day at the University of Tor Vergata	Rome, Italy	29th September, 2023	D.9.6
European Researchers Night	Novi Sad, Serbia	29th September, 2023	D.9.6
MEDICON 2023	Sarajevo, Bosnia	14th-16th September, 2023	D.9.6
European Congress on Gynaecological Oncology	Istanbul, Turkey	28th September - 1st October	D.9.6
AACR Special Conference - Advances in breast cancer research	Boston, EEUU	19th – 22nd October, 2023	D.9.6
ESMO 2023	Madrid, Spain	20th- 24th October, 2023	D.9.6
INCISIVE Clustering event, Madrid 2023	Madrid, Spain	November 7, 2023	D.9.4

International Conference of Medical Physics	Mumbai, India	5th- 9th December, 2023	D.9.6
8th Pan-Hellenic Congress of Oncological Imaging	Athens, Greece	15th December, 2023	D.9.6
EC Workshops 'Landscaping data driven projects and initiatives in the cancer field – rationale and directions for better collaboration and integration'	Online	26th October, 15th November and 5th December, 2023.	D.9.6
Symposium of Innovation in Health Artificial Intelligence: Challenges and Opportunities	Barcelona, Spain	30th November, 2023	D.9.6
HL7 Europe Marathon	Athens, Greece	16th and 17th January, 2024	D.9.6
International Symposium on Biomedical Imaging	Athens, Greece	27th- 30th May, 2024	D.9.6
45th Annual International Conference of the IEEE Engineering in Medicine & Biology Conference	Sydney, Australia	24th-27th July 2023	D.9.6
IEEE Engineering in Medicine & Biology Society	Malta	7th-9th December, 2023	D.9.6
Research to Reality - Digital Solutions to European Challenges	Brussels, Belgium	5th February, 2024	D.9.6
Awareness event on INCISIVE and TRANSITION EU funded projects	Cyprus	27th February, 2024	D.9.6
European Society of Radiology	Vienna, Austrian	29th February, 2024	D.9.6
Technology and clinical practice during the new era of Radiotherapeutic Oncology	Athens, Greece	2nd March, 2024	D.9.6
13th Scientific Congress of the School of Medicine at Aristotle University of Thessaloniki	Thessaloniki, Greece	6th March, 2024	D.9.6
AI4HI clustering meetings	Online	Regularly	D 9.3 - D.9.4 – D.9.6.
26th International Workshop on Design, Optimization, Languages and Analytical Processing of Big Data.	Paestum, Italy	25th March 2024	D.9.6
High-level Conference "BEACON: Mobilising Collaboration among Stakeholders to Optimise the Growing Potential of Data for Tackling Cancer"	Warsaw, Polland.	16th May, 2024	D.9.6

ANNEX 3. News, articles, and press releases

News	Partner	Year of publication	More information
Virtual kick-off meeting – INCISIVE project officially started!	INCISIVE	2020	D.9.3.
Commission proposes measures to boost data sharing and support European data spaces	INCISIVE	2020	D.9.3.
Digital health data and services – the European health data space	INCISIVE	2020	D.9.3.
The TIC Salut Social foundation enhances AI in Catalonia through the INCISIVE European project	TIC Salut Social Foundation	2020	D.9.3
Cloud Security for Healthcare Services - ENISA report	INCISIVE	2021	D.9.3.
AI rules: what the European Parliament wants	INCISIVE	2021	D.9.3.
Cybersecurity to the Rescue: Pseudonymisation for Personal Data Protection	INCISIVE	2021	D.9.3.
INCISIVE is consulting with its future users and beneficiaries	INCISIVE	2021	D.9.3.
Europe's Beating Cancer Plan: A new EU approach to prevention, treatment and care	INCISIVE	2021	D.9.3.
Press release of the INCISIVE project	INCISIVE	2021	D.9.3.
Proposal for a Regulation laying down harmonised rules on artificial intelligence	INCISIVE	2021	D.9.3.
Designing the INCISIVE system through a user centred approach	INCISIVE	2021	D.9.3.
INCISIVE will co-organize the workshop "Big Data and AI in cancer imaging" on 27 July, within the IEEE BHI-BSN conference	INCISIVE	2021	D.9.3.
INCISIVE can access the INbreast database	INCISIVE	2021	D.9.3.

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The use of metabolomics in INCISIVE: a preliminary work	INCISIVE	2021	D.9.3.
The new frontiers in telemedicine	Albini, Adriana	2021	D.9.3
INCISIVE - exploring the potential of novel Artificial Intellligence tools for enhancing current imaging solutions for cancer cases.	eHealth, Wellbeing & Ageing Newsletter	2021	D.9.3
Το ΤΕΠΑΚ συμμετέχει σε ερευνητικό πρόγραμμα που αφορά στα δεδομένα απεικόνισης καρκίνου. Paidea news.	Paidea News	2021	D.9.3
Τεχνητή Νοημοσύνη «στη μάχη» κατά του καρκίνου με τη συνδρομή επιστημονικής ομάδας του ΑΠΘ	Aristotle University of Thessaloniki	2021	D.9.3
BSC to collaborate in the prediction of the behaviour of some tumours thanks to AI	Barcelona Supercomputing Center	2021	D.9.3
Το ΤΕΠΑΚ συμμετέχει σε ερευνητικό πρόγραμμα για τα δεδομένα απεικόνισης καρκίνου.	Cyprus University of Technology	2021	D.9.3
Maggioli Group leads, as Project Coordinator, an EU flagship project on the development of AI for cancer imaging: the INCISIVE Project	Gruppo Magglioli	2021	D.9.3
Es posa en marxa el projecte 'INCISIVE', que vol millorar el diagnòstic i la predicció del càncer amb IA i big data	IDIBAPS	2021	D.9.3
Millorar el diagnòstic i la predicció del càncer amb IA i big data	TIC Salut Social Foundation	2021	D.9.3
What are the opportunities and challenges of a common approach towards an EU cancer imaging infrastructure?	INCISIVE	2022	D.9.3.
El Mobile World Congress tanca amb més de 60 mil assistents	TIC Salut Social Foundation	2022	D.9.3
"INCISIVE is operating at the forefront of innovation, striving to deliver cutting-edge scientific approaches and technologies"	INCISIVE	2022	D.9.3.

INCISIVE partners discuss the progress and next steps of their work two months ahead of the project's mid-term	INCISIVE	2022	D.9.3.
"This is a cutting-edge platform that will change on several revisions, as we will keep on meeting with challenges and finding new solutions"	INCISIVE	2022	D.9.3.
Specific page or mention on partners' webiste:	- Barcelona Supercomputing Center - CER ICT - Cyprus Association of Cancer Patients and Friends - European Dynamics - Gruppo Magglioli - Hellenic Cancer Society - National and Kapodistrian University of Athens - Squaredev - Thridium - The commercial name for Telesto IoT Solutions Limited - TIC Salut Social Foundation - Timelex - University of Helsinki - University of Novi Sad - White Research		D.9.3
News about INCISIVE published on other webpages:	- CORDIS project page - Cyprus university of technology (CUT): participation in the project incisive that aims at exploring the potential of		D.9.3

	new ai tools for enhancing current imaging solutions for cancer cases (European Office of Cyprus)		
	- EHTEL – INCISIVE		
	- European Science-media Hub - EU project : INCISIVE		
INCISIVE's lung cancer pilot study is presented at the European Lung Cancer Congress	INCISIVE	2022	D.9.4
INCISIVE's legal work is shared at the Privacy Symposium	INCISIVE	2022	D.9.4
The European Commission launches the European Health Data Space to advance data sharing and reuse	INCISIVE	2022	D.9.4
INCISIVE launches its first interoperable cancer data repository prototype	INCISIVE	2022	D.9.4
Successful 18-month external review by the EC confirms that INCISIVE is on the right track to achieve its goals	INCISIVE	2022	D.9.4
INCISIVE's participation at the European Congress of Radiology 2022	INCISIVE	2022	D.9.4
"It is important to understand user behaviours, needs and motivations, so we can incorporate their vision"	INCISIVE	2022	D.9.4
Survey: How are you performing AI validation?	INCISIVE	2022	D.9.4
The Holistic Perspective of the INCISIVE Project—Artificial Intelligence in Screening Mammography	INCISIVE	2022	D.9.4
Experiences of cancer survivors in Europe: Has anything changed? Can artificial intelligence offer a solution?	INCISIVE	2022	D.9.4
INCISIVE partners meet in Athens for the 3rd Plenary Meeting	INCISIVE	2022	D.9.4

INCISIVE gathered AI researchers and healthcare practitioners in Belgrade	INCISIVE	2022	D.9.4
The blog on Artificial Intelligence of the European Society of Radiology published our AI4HI position paper	INCISIVE	2022	D.9.4
The BSC brings its AI expertise to the first shared repository of cancer data and images.	Barcelona SuperComputing Center	2022	D.9.4
INCISIVE cancer and AI-related EU-Project coordinated by Maggioli Group, completes its first major milestone	Maggioli	2022	D.9.4
INCISIVE @ ProCancer-I dissemination event in ECR 2022.	National and Kapodistrian University of Athens	2022	D.9.4
INCISIVE launches its first interoperable cancer data repository prototype.	National and Kapodistrian University of Athens	2022	D.9.4
July-October newsletter	National and Kapodistrian University of Athens	2022	D.9.4
El Mobile World Congress tanca amb més de 60 mil assistents	TIC Salut Social Foundation	2022	D.9.4
The INCISIVE project launches its first interoperable cancer data repository prototype.	TIC Salut Social Foundation	2022	D.9.4
The INCISIVE project launches its first interoperable cancer data repository prototype.	TIC Salut Social Foundation – Programa Salut/IA	2022	D.9.4
Artificial Intelligence to improve the diagnosis, prognosis and treatment of cancer	TIC Salut Social Foundation	2022	D.9.4
July newsletter.	TIC Salut Social Foundation	2022	D.9.4
September newsletter.	TIC Salut Social Foundation	2022	D.9.4
The INCISIVE project has launched its first prototype of interoperable federated cancer data repository	White Research	2022	D.9.4
Website for the INCISIVE event in Belgrade	Visaris	2022	D.9.4
European Cancer Imaging Initiative	European Commission	2022	D.9.4

INCISIVE Repository of Cancer Images and Accompanying Clinical Data	Horizon Results Platform – European Commission	2022	D.9.4
Metadata Models: The position of the AI for Health Imaging (AI4HI) network	Post in the European Society of Radiology AI Blog	2022	D.9.4
Considerations for artificial intelligence clinical impact in oncologic imaging: an AI4HI position paper	Post in the European Society of Radiology AI Blog	2022	D.9.4
The European Commission Presents the European Cancer Initiative.	TIC Salut Social Foundation	2023	D.9.4
The European Commission Presents the European Cancer Initiative.	TIC Salut Social Foundation – Programa Salut/IA	2023	D.9.4
Are you going to the Mobile World Congress 2023?	TIC Salut Social Foundation	2023	D.9.4
The EU Commission presents the European Cancer Imaging Initiative which will build upon the results of INCISIVE and other related projects	INCISIVE	2023	D.9.4
INCISIVE partners meet in Barcelona for the 4th Plenary Meeting	INCISIVE	2023	D.9.6
How do INCISIVE's Advisory Board members assess the progress of the project?	INCISIVE	2023	D.9.6
INCISIVE's lecture on Hardware-assisted Trusted Computing at the NeCS 2023	INCISIVE	2023	D.9.6
AI4HI projects shared in Australia their efforts toward building European cancer imaging repositories	INCISIVE	2023	D.9.6
The AI4HI cluster publishes a position paper on data infrastructures for AI in medical imaging	INCISIVE	2023	D.9.6
Recommendations of interoperability standards for projects managing clinical data and medical images: the INCISIVE case	INCISIVE	2023	D.9.6
What will be the benefits of using the pan-European federated infrastructure for cancer images that EUCAIM is building?	INCISIVE	2023	D.9.6

The European Cancer Imaging Initiative releases an informative explainer video	INCISIVE	2023	D.9.6
Watch the video and presentations of the event 'AI and Cancer: Unleashing Opportunities, Overcoming Challenges'	INCISIVE	2023	D.9.6
Share health data with the research community!	INCISIVE	2023	D.9.6
Do you want to know more about the AI services offered through the INCISIVE platform?	INCISIVE	2023	D.9.6
Join a competition to train and refine AI models for cancer research	INCISIVE	2023	D.9.6
Seeking expert perspectives: survey to validate the identified business model and value proposition of INCISIVE's AI Toolbox	INCISIVE	2023	D.9.6
Save the date: European conference on the opportunities and challenges of artificial intelligence in oncology	TIC Salut Social Foundation	2023	D.9.6
New report with recommendations for interoperability standards for clinical data management and medical imaging projects	TIC Salut Social Foundation	2023	D.9.6
IEEE EMBC 2023	TIC Salut Social Foundation	2023	D.9.6
More than 190 health professionals in Catalonia complete the Smart Health Awareness course on artificial intelligence and big data	TIC Salut Social Foundation	2023	D.9.6
More than 190 health professionals in Catalonia complete the Smart Health Awareness course on artificial intelligence and big data	TIC Salut Social Foundation	2023	D.9.6
September newsletter	TIC Salut Social Foundation	2023	D.9.6
October newsletter	TIC Salut Social Foundation	2023	D.9.6
INCISIVE seeks support from hospitals to contribute to its hybrid repository of anonymized medical images	INCISIVE	2024	D.9.6

INCISIVE insights inform discussion panel organized by the EC and the Belgian Presidency on AI serving Healthcare	INCISIVE	2024	D.9.6
News about INCISIVE published in the media:	- **RTS** streamed a piece of video news with an Interview to Vladan Zdravkovic from Visaris (7 min). - **RTS Science Program** streamed a video interview to Vladan Zdravkovic from Visaris. - **Euronews** streamed a piece of video news with an interview to Vladan Zdravkovic from Visaris and Gianna Tsakou from Maggioli (6 min.). - **HEPI**, the **National Serbian TV**, streamed a video news with an interview to Vladan Zdravkovic from Visaris. - The **CNN affiliate for SEE** streamed a piece of video news with an interview to Vladimir Petrovic from Visaris (4 min.). - Los datos al servicio de la asistencia sanitaria (**BYTic Media**)		D.9.4

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