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Deliverable D6.1: MAX communication, exploitation, and dissemination Plan

D6.1

MAX communication, exploitation, and dissemination Plan

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LIST OF ABBREVIATIONS

CoE: Centre of Excellence

NCC: National Competence Centre

HPC: High Performance Computing

CSA: Coordination and Support Action

HW: Hardware

SW: Software

WP: Work Package

GPGPU: General-Purpose computing on Graphics Processing Units

KPI: Key Performance Indicators

SEO: Search Engine Optimisation

STEAM: science, technology, engineering, arts, and mathematics

SWOT: Strengths, Weaknesses, Opportunities, and Threats

AI: artificial intelligence



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1 Executive Summary

As MAX enters its **third phase**, we have taken into account the lessons learnt from the previous iteration and outlined a comprehensive Communication Plan that seeks to **adapt, engage, and innovate**. Guided by three core strategic pillars - **Stakeholder Engagement** (Pillar 1), **Training and Education** (Pillar 2), and **Communication, Dissemination and Exploitation** (Pillar 3) - we aim to push our reach further and more effectively than before. All pillars will be **coherent with a broader strategy developed in collaboration with other CoEs, NCCs, and CASTIEL2**.

In the face of global changes and digitalization, our **Stakeholder Engagement** has never been more vital. We will proactively create and distribute **content showcasing the project's milestones and future directions**, enhancing our relationships with stakeholders and the **broader MAX community**.

We are stepping up our **Training and Education initiatives**, with a strong collaboration with WP5 *Training & community engagement within the HPC ecosystem* and regular webinars, and a new collaboration with primary educational institutions to embed MAX learning contents in their curricula. Our mission is to foster the adoption of MAX resources in various sectors.

Lastly, our pillar on **Communication, Dissemination, and Exploitation** strives to accentuate the transformative potential of MAX. We are committed to **strengthening the MAX brand, promoting inclusivity and gender-balance** in our communication strategy, and **synergizing efforts** with supercomputing and HPC centres and other European Flagship projects. Exploring **new trends in outreach** like interactive, augmented reality strategies, we are poised to bring the excitement of MAX work to a global audience. By increasing the visibility of the MAX CoE efforts, opportunities and achievements we will facilitate the **uptake and exploitation** of the MAX codes and other achieved results.

In these times of rapid change, we are making concerted efforts to ensure MAX remains not just accessible, but also **engaging and inspiring**. This Communication Plan is a roadmap to how we intend to stay connected and impactful, with an eye on building a stronger MAX community and shaping the future of computational materials science.



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2 Introduction

MAX Centre of Excellence (CoE) plays a critical role in **advancing computing power towards exascale and beyond**. By leveraging previous phases of the initiative, it seeks to broaden its reach, engage more industry stakeholders, and consolidate support for innovative hardware and software developed in member states. The project's open-source codes and emerging knowledge enable **scientific, industrial, and societal advances** and will form the foundation of dissemination and communication efforts. The project will also focus on communicating scientific challenges in materials science to **society**.

MAX impact will be maximised through SMART KPIs and objectives outlined in the present Plan. Communication and dissemination channels will facilitate internal communication and reach selected external audiences. The project partners will work together to engage key stakeholders, including European industry, policymakers, software and hardware developers, and citizens.

3 MAX Legacy/History

Since its launch in 2015, the Materials design at the eXascale (MAX) Centre of Excellence has significantly influenced the scientific and technological landscape of computer simulation. While the field itself has seen numerous developments over the past four decades, MAX inception marked **a turning point in the approach to complex problems**.

The project's legacy begins with its first phase, where it made substantial strides in adapting to the disruptive advent of **massively parallel systems**. This necessitated an extensive re-engineering of the quantum materials modelling codebase, setting the foundations for the project's innovative approach.

Building on this success, the second phase focused on the subsequent challenge posed by the emergence of **heterogeneous compute systems**, like GPGPUs. Adhering to the "separation of concerns" strategy, this phase involved significant restructuring of select codes into independent software layers. This strategy is key to MAX strategy, promoting independent development and optimisation of various aspects of the simulations.

Now in its third phase, MAX is leveraging its past accomplishments to continue to drive the European materials simulation community into the **exascale era**. The objective is to harness the power of massively parallel heterogeneous computing systems to tackle previously daunting scientific challenges.

A selection of '**lighthouse codes**' including QUANTUM ESPRESSO, SIESTA, YAMBO, FLEUR, and BIGDFT, evolved from flagship codes to exascale applications, operating collaboratively within tightly bound



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exascale workflows. The development and success of these codes exemplify the project's dynamic evolution and vision for the future.

Today, the MAX community stands as a **thriving network of trained HPC professionals, academic researchers, and industry partners**. Their collective expertise and the numerous success stories that have emerged from this collaboration highlight MAX's significant contribution to the High-Performance Computing ecosystem. The present plan builds on the previous experiences gathered by the MAX community to bring its impact beyond what has been achieved so far.

4 Main objectives

The main objective of the MAX Communication Plan is to create a strong and impactful communication strategy that raises awareness about the MAX project, its objectives, and achievements, while also strengthening its brand and engaging with a diverse range of audiences.

As stated in the project proposal, the objectives of the WP6 *Communication, exploitation, and dissemination* are to:

- Ensure a coordinated and **continued communication of the MAX CoE**, providing appropriate visibility to all stakeholders through the generation of high-quality content, graphic designs and campaigns.
- Deliver an ambitious communication plan with **SMART objectives and feasible KPIs**. The plan defines the key audiences, channels, and strategies to maximise the impact of the MAX results and deliverables.
- Establish the **tools for an efficient tracking of the project's dissemination results** and its subsequent assets against the target stakeholder groups.
- Support and facilitate the organisation of **workshops, events and training that maximise the impact and exploitation opportunities** of the project.

The ultimate goal of this plan is to establish long-lasting relationships and impacts that will span beyond the lifetime of the project.

A transversal effort involving the broad MAX community

The MAX Communication Plan is designed to create a synergistic workflow involving all the project's work packages, particularly WP5 *Training & Community Engagement*, WP6 *Communication, Exploitation, and Dissemination*, and WP7 *Management*. Each of these WPs plays a crucial role in the overall success of the project, and their interplay is fundamental to achieving our shared goals.



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WP5 focuses on addressing the skills gap in the use and development of targeted HPC applications and codes in the materials domain. Its efforts aim to broaden the user base of these codes, in close collaboration with National Competence Centres, the relevant CSA, the CoEs, and the wider European HPC and materials ecosystem.

WP6 ensures the project's visibility through the creation of high-quality content, graphic designs, and campaigns. It establishes tools for efficient tracking of the project's dissemination results, facilitating the organisation of impactful workshops, events, and training opportunities.

WP7 provides the framework for efficient management of MAX activities and services, overseeing institutional cooperation within the broader European ecosystem, and ensures the implementation and promotion of inclusive policies within the CoE.

However, it is only through a **coordinated effort across all these pillars** that the project can achieve core impacts, such as enhancing the visibility of the MAX brand and opportunities to a wide audience, ensuring the impact of the training efforts, and promoting the uptake of the MAX codes among diverse audiences. This concerted approach also ensures our commitment to diversity and equality remains at the forefront of our work, underlining our belief that these values are vital for the advancement of the scientific community and society as a whole.

5 Key messages

The MAX CoE is a revolutionary initiative aimed at advancing materials design and discovery using exascale computing. At the heart of MAX are the core values of collaboration, innovation, and inclusion, which have shaped the project's three pillars of stakeholder engagement, training and education, and communication, dissemination, and exploitation.

These values and pillars are the driving force behind the project's success, and the key messages of MAX serve to encapsulate these ideas in a way that is clear and accessible to who encounters them. Here are some of the most important messages of the MAX project:

- The **future prosperity of Europe** and its scientific, industrial, and societal well-being and sovereignty depend on advances in materials research and the exploitation of novel materials.
- "Building Europe's Prosperity Brick-by-Brick with Revolutionary Materials Research."
- "Shaping the New Era of Industrial and Social Well-being with MAX – Driving Europe's Material Advancements."



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- Accurate and reliable theoretical modelling using quantum mechanical simulations is needed for the **design of novel materials** with optimal properties.
 - "Designing Tomorrow: MAX Quantum Simulations for Optimal Material Properties."
 - "Precision at its Peak – The MAX Commitment to Reliable Theoretical Modelling."
- Europe has achieved **leadership in the field of quantum-mechanical materials' simulations** and codes, thanks to decades-long investment by its scientific communities in various fields.
 - "MAX: At the Forefront of Europe's Leadership in Quantum-Mechanical Materials Simulations."
 - "Igniting Europe's Quantum Leap: MAX – The Legacy of Decades-Long Investment in Material Simulations."
- The MAX project aims to bring the most successful open-source community codes in quantum materials modelling **to the exascale and beyond**, and ensure their resilience, optimization, and implementation with capabilities that are uniquely enabled by the hardware evolution.
 - "MAX: Exascale Empowerment for Open-Source Quantum Materials Modeling."
 - "Steering the Hardware Revolution: MAX Journey to Resilient, Optimised Exascale Capabilities."
- The MAX consortium gathers **key expertise** from the HPC centres, the main developing teams of its lighthouse codes, leadership in the design of complex exascale-oriented application workflows, and a sustained effort in training and education that runs deep in the community.
 - "MAX Consortium: Where Expertise Meets Innovation in the Heart of HPC."
 - "Building the Future with MAX – A Legacy of Training, Expertise, and Progress in the HPC Ecosystem."
- The **uptake and exploitation of the MAX results offer innovative approaches to global challenges**, such as **sustainability**. Key messages around application domains will be developed to enrich dissemination materials and specific actions such as the booth design.
 - "Reimagining Energy Efficiency with MAX"
 - "Harnessing HPC for a Sustainable Future"



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6 SWOT

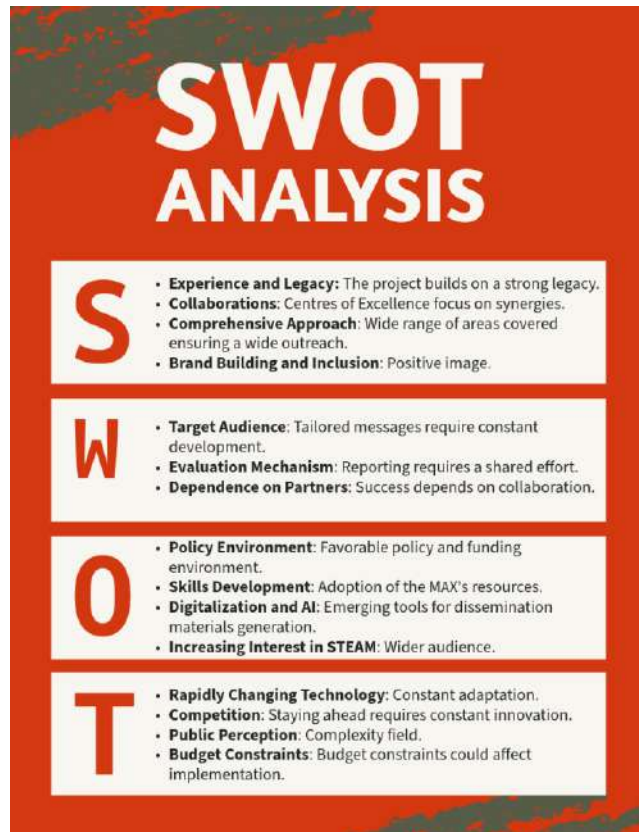


Fig 1: SWOT analysis of MAX communication program

In order to draft an impactful and efficient communication plan, it is very useful to perform a SWOT analysis of the CoE's environment and experiences.

Strengths:

Experience and Legacy: The project builds on a strong legacy with extensive experience in simulation and HPC fields. The successful first and second phases create credibility and trust.

Collaborations: The very concept of the Centres of Excellence is focused on creating synergies with HPC centres, other projects and educational institutions, broadening the scope and reach of the initiative.

Comprehensive Approach: MAX CoE covers a wide range of areas from stakeholder engagement, training, and education to communication, dissemination, and exploitation. This ensures a wide outreach.

Brand Building and Inclusion: The plan prioritises the strengthening of the MAX brand and promoting inclusivity, which will create a positive image and attract diverse stakeholders.



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Weaknesses:

Target Audience: To effectively achieve a broad outreach, MAX requires focused communication strategies for specific target groups such as policymakers, software developers, industry stakeholders, and the general public. Such tailored messages require further development.

Evaluation Mechanism: The communication strategy requires a robust mechanism for evaluating the effectiveness of the communication and outreach activities. Feeding such reporting systems requires a shared effort and clear workflows that need further development and implementation along the project life.

Dependence on Partners: The project's success is highly dependent on the successful collaboration and contribution of various partners and stakeholders.

Opportunities:

Policy Environment: There is increasing global focus on exascale computing and materials science which could provide a favourable policy and funding environment, with initiatives such as CASTIEL2 which coordinate shared impact opportunities.

Skills Development: The focus on training and education provides an opportunity to develop skills in the community, thus fostering a greater adoption of the MAX resources.

Digitalization and AI: With global changes involving AI and digitalization, there are opportunities to leverage new technology and platforms for communication and outreach. Emerging tools will have an impact in creativity and content curation, improving the dissemination materials generation.

Increasing Interest in STEAM: There is growing interest in science, technology, engineering, arts, and mathematics (STEAM) fields, providing a wider audience for the project's outreach efforts.

Threats:

Rapidly Changing Technology: While this provides opportunities, it also means that the project has to constantly adapt to stay relevant.

Competition: There may be other similar projects or initiatives, and staying ahead may require constant innovation and improvement.

Public Perception: The complexity of the field may lead to misperceptions or misunderstanding among the general public, affecting the project's image.

Budget Constraints: Any potential budget cuts or constraints could affect the implementation of the comprehensive communication plan.



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7 Audiences

The following audiences will be targeted via specifically tailored communication and dissemination materials and strategies. The objective is to cover the full exascale ecosystem and showcase the power of MAX beyond its usual public and by reaching out to new population segments.

- **Project Partners (internal communication).** Internal communication among partners is crucial for the correct advancement of the project and the achievement of its goals, and MAX has implemented a strong internal communication strategy that facilitates scientific collaboration, information flow among partners, reporting, and coordination.
- **Researchers.** The research community beyond the project partners is a key target audience. High-profile events and contents will be delivered for the communities of researchers that will use MAX results in the materials science domain. Two specific subgroups will focus our efforts:
 - **Materials science researchers:** A comprehensive distribution list will be elaborated to reach out to materials science centres and researchers in Europe and beyond. The main objective is to disseminate the results for uptake and event announcements coming from MAX among the research community.
 - **Code developers:** Specific events and actions will be announced to engage code developers in the materials domain, to promote awareness about the MAX codes and opportunities. Key messages will include the announcements of hackathon-like events and tailored training, both to engage new users and to attract talented coders (see WP5).
- **Supercomputers, and National Competence Centres in HPC.** Interaction with Supercomputers and NCCs is crucial for MAX, as they are key actors in dissemination of our results and products, the engagement of the user's communities, and training events, schools and hackathons organised by and around MAX. They will be both a target of our communication and dissemination activities, and sources of information about MAX to the HPC community at large. Direct channels of communication will be established through the management team with the different NCCs (including those already present in MAX as partners of the consortium, like BSC in Spain and Leonardo and CINECA in Italy), and complementary CoEs.
- **Industry.** To reach their full potential for impact, the MAX results must make their way towards industrial applications. Potential industrial users of the lighthouse codes are therefore a key target community for our communication and dissemination activities, and a crucial potential actor for exploitation of MAX results. Additionally, HW manufacturers and SW vendors are important actors, both in the co-design activities and in the potential for economic impact of the MAX applications if incorporated into commercial services and products. Interaction with relevant HW manufacturers is ensured due to their participation in the consortium, and the links already established with external



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ones (e.g., NVIDIA, IBM). Links with SW vendors, as possible exploitation channels for MAX software developments, will be restricted to companies within the European Union and the Participating States of the EuroHPC Joint Undertaking.

- **Policy makers.** MAX will develop contents and activities oriented to inform and support decision making by the competent stakeholders in the rapidly evolving European supercomputing landscape. Such materials will be produced through two different approaches: (i) The curation of articles and events specifically designed for policy makers, and (ii) the design of open-science events based on the RRI principles that allow the co-creation of documents reflecting the interests, concerns and opportunities defined by different stakeholders.
- **Media.** Impact on media is a strategic objective, as a channel to spread the results and explain the achievement of MAX among European citizens. The cross influence of journalistic content has an enormous potential to create cooperation opportunities, public awareness, and a positive perception of the European efforts and capabilities in leading the development and exploitation of the next generation of computers and codes.
- **European citizens.** The new edition of MAX will multiply its efforts to reach out to European citizens through engaging outreach events and contents. European Researchers' Night (ERN) and other local events will be populated with MAX experts and outreach materials. Such actions will pursue a favourable opinion towards European investments and capabilities in frontier computing and codes, and contribute to attracting new talent to computing-related disciplines. To do so, one of the innovative approaches embraced by MAX is the development of specific content to be used by the educational community in the classroom, mainly in secondary school, following the successful previous experience at ICN2 (awarded with the 2018 National Award for Scientific Communication in Catalonia for educational material on nanotechnology for secondary school students).

8 Available channels

MAX project uses various channels to effectively reach out to different audiences, including a revamped project website, social media platforms with video content, webinars, podcasts, media relations, conferences, flyers and demonstrators, newsletters, and outreach events. These channels will be used to showcase project developments, promote events and results, and share technical information. MAX will also create educational content to be used in high school classrooms.

The main channels created by the project to effectively reach out different audiences include:



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- **Project website.** [MAX website](#), running for 7 years with 5000+ monthly visits, will be revamped to reflect the project's evolution and support HPC development and European sovereignty in that field. Objectives include showcasing MAX codes, promoting events and results, and offering targeted content. The site will serve as a central point for technical results dissemination, redirecting traffic to code and workflow repositories. The site will match the CoE's scientific excellence level, with Search Engine Optimisation (SEO) actions to improve MAX content's visibility and usability.
- **Project Repository.** The internal communication tools, include a dedicated repository platform based on Google Drive, a shared calendar and other collaboration tools, which will serve both scientific and management purposes.

MAX Repository structure:

1. MAX Official documents
2. MAX Continuous Reporting
3. MAX Events
4. MAX Deliverables
5. General Assembly
6. WPs: a dedicated repository for each WP. Each WP has a dedicated room store where all the files it wants to share with the working group and the management team.
7. MAX Partners: an additional working space divided per partner. Each partner can use its folder to save documents and files.

In addition to these internal communication tools the Consortium has 2 reference files: the SINGLE ENTRY POINT (a collection of deadlines, activities, information, all stored in a single file, which is continuously updated) and the MAX GUIDELINES for MANAGEMENT (a short manual to orient the everyday activity of the consortium and the relationship of each partners with the management staff).

- **Social Networks.** MAX is committed to generating a constant flow of information to keep its audience engaged. The social media profiles of the Centre of Excellence are focused on [Twitter](#), [LinkedIn](#) and [YouTube](#). The project will explore innovative approaches such as using AI-generated images to increase the attraction power of its social network content (e.g., International Day of Women and Girls in Science, 11 February illustration - See section 11 - Report on activities performed within M6). Video content, to be distributed on YouTube but also adapted to other social media formats, will have a central role in the project promotion and followers' engagement. By adopting these tactics, MAX aims to build a stronger and more active online community that is engaged and interested in its activities and initiatives.



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- **Webinars, seminars, and podcasts.** MAX will regularly schedule events to promote its results to diverse audiences, utilising both face-to-face and online formats. Two workshops are planned to update targeted audiences on advancements and results, while a series of focused webinars will ensure a regular presence of MAX key topics in the European agenda. Additionally, podcasts will be used as a strategic tool to reach out to specialised audiences and the general public. The use of storytelling techniques will enhance the appeal of MAX key topics.
- **Training events.** Building upon the success of prior iterations, WP 6 *Communication, exploitation, and dissemination* and WP 5 *Training & Community Engagement* in the new phase of MAX will join forces. The aim is to augment the impact of MAX specialised training and education efforts in computational materials science, by both amplifying their visibility and celebrating their successes. We will promote the project's emphasis on fostering diversity and will coordinate with established organisations, NCCs, and CoEs across Europe. In doing so, we'll extend our outreach, particularly to the emerging user communities in the EuroHPC JU, strengthening the MAX project's influence on the HPC ecosystem.
- **Media relations.** MAX will leverage its partners' networks to target media impact through national and international press releases and direct contacts with journalists. The project will support its partners in creating and curating content, and select key milestones such as project kick-off, publication of selected papers, and important events to increase media impact. The communication strategy with the media will be aligned with that of the HPC centres to provide a comprehensive view of the project's various impacts.
- **Conferences and industry forums.** MAX will enhance its presence in selected international events by designing a project booth. The booth will serve as a platform to showcase the project's main objectives and results to a broad audience, to promote the brand recognition, and to establish new contacts with potential stakeholders. The MAX centre will encourage the participation of its experts as speakers and content providers and select one event per year in which promotion materials will be showcased. Such missions will facilitate the projection of its brand.

Among other events, conferences attended by MAX network will be: International Supercomputing Conference - ISC; Research to Business - R2B; EuroHPC Summit Week

- **Flyers and demonstrators.** MAX Centre will produce a general flyer describing the project that will be revisited and updated throughout the project's lifetime. In addition, other dissemination materials will be created for use at selected events, including branding materials for a project travelling booth and presentations tailored to different stakeholders. These materials will be made available on demand for MAX experts to use at conferences and industry forums, helping to increase brand recognition and promote the project's goals.

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- **Newsletter.** Well-timed and designed newsletters are a useful approach to share the advances of the project among its partners and beyond. The project will use them to increase the accessibility of the communication, dissemination, and exploitation actions undertaken by MAX.
- **Outreach events and activities.** Outreach is a key dissemination tool to create awareness about the strategic challenges faced by MAX and the advances made by the consortium. We will co-create outreach content to be distributed through the project communication channels as well as by the partners in local science fairs and outreach events. Special highlights on the creation of educational content to be used in high-school classrooms by teachers will be cast, to allow education professionals to deliver curricular content through examples coming from MAX cutting edge research.

9 Strategic pillars, actions and SMART KPIs

The communication plan for the MAX project is **based on three fundamental pillars** that must be taken into account in all actions. Each pillar is developed into a series of actions and KPIs which will guide the Centre communication efforts. These actions are designed to be transversal, utilising one or more of the communication channels throughout the entire project lifecycle.



Fig 2. The MAX Communication Plan Pillars

Pillar 1: Stakeholder engagement

The first pillar of the MAX communication plan is centred around stakeholder engagement. The aim of this pillar is to create a **stronger community around the MAX project** by developing tailored actions for different stakeholders. The actions will be carefully curated to ensure that stakeholders are kept informed about key project updates, achievements, and events.

The plan also includes building a joint communication strategy with HPC centres, NCCs, and other European Flagship projects, sharing benchmark data, sharing success stories, and facilitating the sharing of codes, papers, and documents in compliance with Open Access and Open Data policies. Through



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sharing benchmark data, success stories, and establishing long-lasting relationships, we aim to create an enduring impact that extends beyond the lifetime of the project.

Actions:

- 1. Proactive content generation:** The ICN2 communication team, together with the MAX CoE management team and communicators from all involved actors, will generate a continuous stream of up-to-date content that will be distributed by the project partners. The aim is to keep partners and other stakeholders informed about the project's progress, achievements, and future goals. This will include communication kits, exclusive graphic designs, and other relevant content. By proactively generating updated content, MAX aims to ensure that stakeholders are kept up-to-date on the project's activities and achievements.

SMART KPIs:

- Producing at least **4 news items per month** related to the MAX CoE activity. The news will be shared through the project website and social Networks with the support of the MAX partners. Some selected topics, ranging from scientific breakthroughs to participation in relevant events, will be shared with the media in the form of press releases distributed using the partner's local networks.
- **Social media platforms** will also be utilised to promote MAX CoE's activities and engage with followers. Social media updates on Twitter, LinkedIn, and YouTube will promote project activities and drive engagement with followers. The Centre's posts will include new approaches to increase the MAX community of engaged followers, such as **AI-generated images**.
 - At least 10 posts on the project's Twitter account per month.
 - At least 5 posts per month on LinkedIn introducing MAX-related highlights.
 - > 20 new videos on the YouTube channel by the end of the project (M48).
 - Increase the number of followers by 100% by the end of the project (M48).The figures at the start of the project are as follows: LinkedIn >700 followers; Twitter: >1400; YouTube:>400.
- **Periodic newsletter:** It will highlight the project updates and ensure that stakeholders are kept up-to-date with the latest developments. Starting at M10. The distribution list will grow starting from the previous iterations of MAX contacts.
 - At least 4 Newsletter issues will be launched per year, starting on M10.
 - Increased reach of the newsletter (at least 200 new subscribers by M48).
- **Branding events and seminars:** To broaden the impact of the MAX brand, a variety of general events will be leveraged, transcending the traditional technical and training sessions. Our objective is to extend our outreach to a diverse audience of potential users and coders by supporting community engagement events fostered by WP5 and supporting events beyond WP5 when needed. By ensuring the presence of MAX experts at these multifaceted events, we will provide a platform to showcase



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the MAX brand, emphasising the wealth of opportunities it presents. This initiative is not only a relevant component of our communication strategy but is also a means to nurture an inclusive and expansive community.

- Supporting at least 2 Community Engagement events curated by WP5. 2 specific banners. 2 specific news pieces. 4 specific social media impacts.
- The CoE MAX will organise events beyond WP5 when opportunities and needs arise. At least 2 events organised, promoted (2 banners) and covered (2 news items and 4 social media impacts). E.g., A workshop in cooperation with the National Competence Centre in HPC of the Czech Republic. The objective of the workshop is to invite the experts of the CoE MAX and introduce the centre of excellence and its activities to the stakeholders of the Czech Republic, informing about the advancements and results of the CoE MAX and help with the awareness of the project in the Czech Republic.

2. Joint communication strategy developed with supercomputing and HPC centres, NCCs, complementary CoEs, and other European Flagship projects: Working together with key European initiatives such as CASTIEL2 offers an opportunity for synergistic efforts, increasing the impact over different audiences. Aligning messages with other CoEs, as well as with supercomputing and NCCs in HPC, will project a stronger and more impactful message.

SMART KPIs:

- Building a **joint communication strategy** with supercomputing and HPC centres, NCCs, CoEs, and other European Flagship projects.
 - Establish an updated contacts database by M10.
 - Discussing shared opportunities with key stakeholders in open and one-to-one meetings by M12.
 - Having an active role in discussion forums about how to disseminate and exploit HPC-related results (e.g., CASTIEL2 communication meetings) by M6.
 - Designing at least one communication material/activity shared with other CoEs, NCCs and HPCs per year since M12 (M24, M26, M48). Collaboration with related CoEs will be fostered (e.g., NOMAD, ESIWACE3).
- Developing and sharing **benchmark data** on the performance of MAX applications in existing EuroHPC computers.
 - Disseminating results about MAX codes performance when new breakthroughs and benchmark analysis are published.
 - o At least 1 yearly news item about MAX codes performance.
 - o At least 1 dissemination material (flyer) with benchmarking information by M12.



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- o Materials to be disseminated at least 4 international conferences by the end of the project (M48).
- Curate **success cases achieved with MAX centre**, showcasing the potential of the project's codes combined with exascale computers in achieving solutions for industrial and societal challenges. Such materials will serve as **examples of exploitation pathways** that will pave the way for further application approaches and interactions.
 - At least 1 yearly news item about MAX success cases to be shared with and by CoEs, NCCs and HPC centres.
 - Identifying impacts worth becoming press releases. Impact inside and outside the MAX CoE, together with the journalistic interest of the covered topics, will determine when a press release should be curated and launched in a coordinated way by different CoE nodes. At least 2 press releases during the life of the project.
- Facilitating the **sharing of codes, papers, and documents** in compliance with Open Access and Open Data policies.
 - The project communication and management team will ensure that all relevant data, articles and documentation is immediately available in Open Access and following the open Science requirements.
 - o Updated list of articles related to the MAX Codes available in the MAX Centre website, including at least one link to their open access version.
 - o Updated list of all deliverables and final documents curated within the MAX Centre will be available on its website and disseminated through social networks and other channels during all the initiative's lifecycle.

Pillar 2: Training and Education

Training is a crucial component in introducing the MAX codes and workflows to a wider audience and fostering their adoption within different communities, including academia, industry, and young students. As such, the MAX CoE has prioritised within WP5 *Training & Community engagement* the development of comprehensive training materials and programmes to provide researchers and industry professionals with the necessary skills and knowledge to effectively utilise the project's resources.

This pillar is one of the main communication pathways to **foster the exploitation of the MAX CoE results**. The present communication plan supports the promotion and coverage of the training and educational events in order to multiply their impact and visibility.

The training and education-related actions of the MAX communication plan are:



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- Promote and ensure coverage of the training webinars and events** hosted to provide a more in-depth overview of project activities and progress, featuring different partners and stakeholders. These webinars and events, mostly led by WP5, will offer stakeholders the opportunity to ask questions and provide feedback, creating a sense of involvement and community around the project and facilitating the uptake of the project codes. Through these actions, the MAX Centre aims to foster engagement and a sense of community. With a strong branding effort and proper coverage of the main highlights of the events, including website news, social networks posts and when available videos of the full training available on the MAX YouTube Channel.

SMART KPIs:

- **Promotional materials developed for the WP5 training sessions** for researchers and industry professionals on the use of MAX codes and workflows.
 - **Banners and promotional posts** to promote the 4 training (4 per year).
 - At least 4 banners per year
 - At least 20 training-related posts per year on LinkedIn and Twitter
 - **News items on the MAX website** to cover the training events (4 per year).
 - When available, the **training event videos** will be available on YouTube (>4 videos per year).
 - **Developing educational materials**, including video tutorials and manuals, to be shared on the MAX website and social networks. Such materials will be an introduction to the different codes, promoting the more detailed training events developed by WP5.
 - At least one **educational tutorial on how to master the MAX codes** will be produced per code by the end of the project (M48). Such materials will be mainly focused on video format and shared via YouTube (at least one educational video per code available by M48).
- Partnering with **pre-grade educational institutions** to adapt MAX training and education materials to their curriculum. As we look into the future, we recognise a growing need for individuals with advanced skills capable of extracting the maximum benefit from the use of codes developed by MAX and other initiatives. Thus we have to define an action to forge connections with pre-university students, who seek inspiration to shape their future professional careers. This audience represents a rich pool of potential talent. They are tomorrow's researchers, data scientists, and leaders in advanced computational fields.

We consider it necessary to **foster scientific vocations among these young minds**, particularly encouraging girls and those from underrepresented groups, who often have fewer opportunities to access this type of content. To this end, MAX will build on pre-existing networks established by the project partners (e.g.: [NanoEduca](#) (ICN2); [Crazy for Supercomputing](#) (BSC)) to collaborate with pre-grade educational institutions, defining training and educational materials adapted to their curricula. This will provide students with early exposure to computational materials science, inspiring them to



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pursue careers in this exciting and impactful field. Through this proactive and inclusive approach, MAX is not only shaping its own future, but also contributing to the broader diversification and advancement of the scientific community.

SMART KPIs:

- Materials curated to be used by teachers in **high school classrooms** and by grade students, curated by M24.
- At least **50 documented uses** by the end of the project (M48).

Pillar 3: Communication, Dissemination and Exploitation

Pillar 3 of the MAX CoE focuses on the communication, dissemination, and exploitation of the Centre's work, bringing the MAX applications to the attention of a wider audience. Through **targeted communication strategies and impactful visual displays**, we aim to showcase the potential of MAX to revolutionise computational materials science. By incorporating gender and inclusion issues and building joint communication strategies with other European Flagship projects, we are committed to creating a community that celebrates diversity and collaboration.

The communication, dissemination, and exploitation actions of the MAX communication plan complement the previous pillars through:

- 1. Strengthening the MAX brand:** A three-folded strategy will be pursued to make the MAX brand even stronger. This will involve implementing a revamped project image with a cross-impact in all its products and actions, creating high-quality content to be distributed via the different communication channels, events, and training activities, and having a voice of its own in selected international events.

SMART KPIs:

- **Google Drive based repository:** This platform will serve the objective of facilitating interactions and workflows within the MAX centre, but also making all dissemination materials available for the MAX partners to facilitate the access and use of the branded materials. Thus, the platform will be a tool to facilitate a coherent branding among partners.
 - The internal interaction platform is available from the beginning of the project, the instructions to successfully use the repository and facilitate the interactions among the partners have been shared during the Kick-off meeting and distributed to the partners in April.
- **Revamped website:** Update tasks to adapt the contents to the third iteration of the project and revamp the website design.



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- Revamped website **launch by M10**. This includes a SEO analysis of the content and a series of actions to make it more efficient and user-friendly.
 - **Critical content**, such as involved codes and partners, updated in the pre-existing website by M2.
 - **Website monthly visits**: Increase the number of monthly visits to >6000 per month by the end of the project.
 - **MAX flyer**. A flyer will define the new iteration of MAX and establish its new goals and approaches.
 - Updated version of previous flyer by M6.
 - Revamped flyer delivered by M10.
 - Flyer distributed in at least 6 international events by the end of the project (M48).
 - **MAX booth**. To increase the impact of the centre in strategic international events, a booth will be created to be built in selected events with a high presence of MAX's partners presence. Specific messages around application domains and success cases, such as synergies for sustainable HPC, will be curated to make the booth relevant and engaging.
 - Booth designed by M12.
 - Booth showcased in at least 4 international events by the end of the project (M48).
 - At least 100 documented contacts happening at the booth measured by *on site* data collection from booth visitors (M48).
 - **Project PPT slides**. A new MAX PPT template, including general slides about the MAX centre, will support a harmonised dissemination through its partners.
 - New project PPT template available by M3.
 - Slides showcased in at least 10 international events by the end of the project (M48).
- 2. Gender and inclusion issues:** MAX will implement an inclusive and gender-balanced communication strategy and image in collaboration with WP7 *Management* and other WPs such as WP5 *Training & Community engagement*. We will review our contents before release through an inclusive and gender-friendly prism, and develop specific actions, such as participating in Women-in-Science events, promoting female talents to engage in the coding, scientific, and industrial challenges fostered by MAX. We will also celebrate inclusive events and deploy unbiased talent attraction efforts.

SMART KPIs:

- Develop **specific yearly campaigns and events** around February 11 (International Day of Women and Girls in Science) and March 8 (International Women's Day).
 - Specific campaigns launched before M4 (low profile), M16, M28 and M30.
 - Host at least 2 events focused on female talent and leadership by the end of the programme (M48).
- Highlighting female profiles in social media.



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- Whenever possible, female protagonists will be brought into the light to offer new role models to the next generations of researchers. At least 3 female profiles highlighted per year (M48).
 - Review the **website content and dissemination materials** to detect gender and diversity bias and ensure that diversity is reflected in the MAX Centre's graphic materials.
 - Gender and diversity analysis of the MAX dissemination materials by M12.
 - Participating in at least one **female targeted outreach event** per year. Outreach is regarded as a relevant tool to attract and motivate young female talent (4 by M48).
- 3. Exploring innovative outreach approaches:** MAX embraces new trends in communication and storytelling, such as interactive environments associated with advanced technologies, to create excitement and awe around the objectives and achievements of the MAX project.

SMART KPIs:

- Creating a **virtual exhibit about MAX in a devoted MetaVerse**, and dissemination materials using impactful **virtual/augmented reality strategies** to be showcased in congresses and fairs.
 - Virtual exhibit launched by M24.
 - Analytics report on exhibit usage by M48.
- Curation of **outreach content**. Engaging materials to be used in outreach events will be curated during the life of the project.
 - A first pack of outreach materials will be shared among partners by M10 and showcased in at least 8 outreach events by the end of the project (M48).
- **Holographic design** to be showcased at international fairs. A technology based on rotating leds to create a hologram-like effect will be used in order to attract visitors to the MAX centre booth at international conferences. This eye-catching technology is a great tool to trigger conversations.
 - **Holographic design** to be used at international events produced by M10.
 - Holographic design **displayed at least 2 international events** where the MAX Centre booth is displayed by M48.



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10 Tentative GANTT charts

Pillar 1: Stakeholder engagement										
Action	KPI	M0	M6	M12	M18	M24	M30	M36	M42	M48
Proactive content generation										
	4 news items per month									
	10 Twitter posts per month									
	5 LinkedIn posts per month									
	> 20 new videos on the YouTube									
	Increase SSNN followers by 100%									
	4 Newsletter issues per year									
	Increased reach of the Newsletter									
	Branding events (Support 2 WP5 engagement events and foster 2 events beyond WP5)									
Joint communication strategy										
	Updated contacts database									
	Open and one-to-one meetings (at least 10)									
	Active role in discussion forums (2 per year)									
	> 1 material/activity shared with CoEs, NCCs and HPCs per year									
Benchmark data on the performance of MAX applications										
	>1 yearly news item about MAX codes performance									
	> 1 Flyer									
	Materials disseminated at least in 4 international conferences									
	>1 yearly news item about MAX success cases									
	2 press releases about relevant impacts									
	Updated list of articles related to the MAX Codes									
	Updated list of all deliverables and final documents									

Fig 3. MAX Pillar 1 GANTT chart



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Pillar 2: Training and Education										
Action	KPI	M0	M6	M12	M18	M24	M30	M36	M42	M48
Promote and ensure coverage of the training webinars and events										
	> 4 promotional banners per year									
	> 20 training-related posts on SSNN									
	4 training-related news items on the MAX website									
	> 4 training event videos per year									
Partnering with pre-grade educational institutions	5 video tutorials on how to master the MAX codes									
	Materials curated to be used by teachers in high school classrooms									
	> 50 documented uses									

Fig 4. MAX Pillar 2 GANTT chart



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Pillar 3: Communication, Dissemination and Exploitation										
Action	KPI	M0	M6	M12	M18	M24	M30	M36	M42	M48
Strengthening the MAX brand										
	Google Drive based repository	█								
	Website critical content update	█	█							
	Revamped website			█						
	> 6000 website monthly visits									█
	Quick critical update of previous flyer		█							
	New flyer delivered			█						
	Flyer distributed in >6 international events									█
	MAX booth designed			█						
	Booth showcased in 4 international events									█
	> 100 documented contacts happening at the booth									█
	New PPT template	█	█							
	MAX Slides showcased in >10 international events									█
Gender and inclusion issues										
	Specific yearly campaigns and events			█		█		█		█
	Host 2 events focused on female talent and leadership									█
	3 female profiles highlighted in MAX SSNN per year			█		█		█		█
	Gender and diversity analysis of the MAX dissemination materials			█						
Exploring innovative outreach approaches										
	Virtual exhibit about MAX					█				
	Analytics report on exhibit usage									█
	Pack of outreach materials delivered			█						
	Pack of outreach materials showcased in 8 outreach events									█
	Holographic design produced			█						
	Holographic design displayed at least 2 international events									█

Fig 5. MAX Pillar 3 GANTT chart



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11 Report on activities performed within M6

Within the first six months of the project, the MAX communication efforts have already yielded several noteworthy results.

We marked our presence in significant meetings and conferences. Our participation in the **CASTIEL2 kick-off meeting** in Stuttgart, Germany, in February 2023 and the subsequent **online NCCs-CoEs meeting** in April, where we actively contributed to all thematic groups, has positioned MAX as an integral part of these networks.

Active collaborations have been forged with a range of partners, with some support materials and coverage offered by WP6 actions. Notably, we have worked closely with NCC Sweden on the MAX2 course "[Efficient materials modelling on HPC with QUANTUM ESPRESSO, Yambo and BigDFT](#)" held November 14-17, 2022, and with NCC Netherlands on the MAX course "[MPI and OpenMP in Scientific Software Development](#)" conducted from June 12-14, 2023.

The importance of our involvement was mirrored in key events such as the **Euro HPC Summit Week 2023** in Gothenburg, Sweden, and the **ISC High Performance - ISC23** event in Hamburg, Germany. Our representatives enriched these platforms with their presence and engagement. An updated version of the previous MAX **flyer**, a **video** to be showcased on the CASTIEL2 booth and a **poster** summarising the MAX main goals were produced.

Promoting **gender equality** is at the core of our mission. This year, MAX Coordinator Elisa Molinari participated in the female-focused CECAM event "[From women's eye](#)" - an initiative designed to inspire and support women in simulations and STEM faculties. The link to the event is available on our [Twitter](#) profile. A specific social media [campaign](#) was launched to celebrate the International Day of Women and Girls in Science.



To increase visibility and uniformity, a **banner template** has been created and effectively used to promote our inaugural MAX training events. This simple, yet impactful tool helps bolster our brand identity and awareness.



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Our online presence has also been significantly strengthened. **Regular updates** are shared on our Twitter and LinkedIn accounts, fostering engagement and broadening our reach. The MAX project website has been updated with fresh content to reflect the changes in the third iteration of the project. News and agenda items are continually refreshed, and a more comprehensive website revamp is currently underway.

In summary, the early months of our project have been marked by active engagement and significant progress across a variety of communication fronts. These early achievements promise a successful communication strategy in the long run.