eFlows4HPC

Enabling dynamic and Intelligent workflows in the future EuroHPC ecosystem

D8.4 Final Report on Dissemination and Communication Activities

Version 1.0

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Change Log

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V0.4	Fourth draft with reviewers comments addressed
V0.5	Final version with annexes included
V1.0	Document formatted for submission

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1 Executive Summary

This report summarises the communication and dissemination activities carried out by the eFlows4HPC project from January 2023 (M25) to January 2024 (M35). This document further encompasses the conclusive assessment of the WP8 Key Performance Indicators (KPIs) established at the project's onset, all of which have been accomplished with success, and in certain instances, even exceeded expectations.

During the last year of the project, the consortium **organized four community workshops** (see D7.4) that helped significantly to disseminate the developed HPC workflows on the particular scientific communities as well as others, the consortium published **32 open access scientific papers** and participated in a total of **33 events** during the 36 project months (excluding community workshops and participation in trainings or hackathon).

2 Dissemination materials

2.1 Corporate image

Overall, the branding defined at the beginning of the project has been correctly applied throughout the project's duration. Most recently, consortium partners requested a new branded template material to develop a whitepaper, where WP8 team adapted the deliverable template to this new format making sure the EC dissemination and communication rules for a public document. All partners were conscious about the relevance of applying the project brand as well as its acknowledgement sentences both for the European and national funding programmes. WP8 leader reminded all partners in consortium meetings about the location of templates and project material, as well as the acknowledgement sentence both for national and European funding.

2.2 Flyer and poster

Both flyer and poster template were used in several events and trainings. The flyer can be downloaded from the project website. It is important to highlight that these materials will continue being used beyond the project as, for example, a poster has been submitted at the academic conference EuroHPC Summit Week 2024 exhibition.

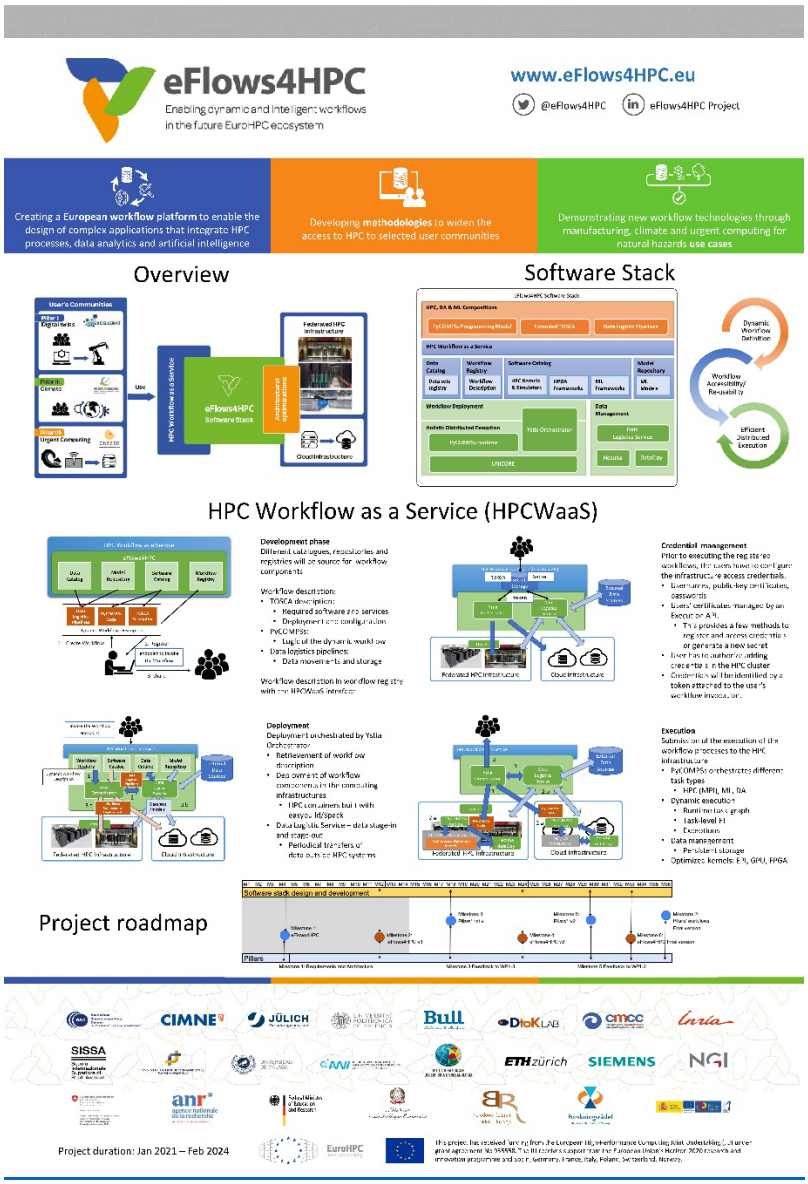


Figure 1. Poster submitted at the EuroHPC Summit Week 2024.

Utilizing this poster at events and conferences has effectively communicated complex information in a more visual format. Its use in events has allowed for real-time engagement with stakeholders.

3 Website

As indicated in previous reports, the eFlows4HPC project's website served as the central hub for all information related to the project. It was regularly updated with news, press releases, events and publications. Two major changes were done on the website: on the one hand, a step-by-step guide video was included and highlighted on the Software page and, on the other hand, a new page titled Key Exploitable Results was created under the "Results" menu option. This page is set to include highlighted KERs from the project with links to the Horizon Results platform, prepared in collaboration with WP7.

The third year of the project has seen the performance of the website be improved due to the attendance to events as well as the organization of the community workshops in the last stage of the project. The number of sessions has increased by 64.74%, from 3.369 (M24) to 5.550 (M38). The established KPI in the D8.1 Communication and Dissemination Plan for this metric is a yearly increment of at least 5% in number of sessions. In this case, the number of sessions has remained stable, indicating the higher number of returning visitors over new visitors: 205 users and 163 new users in this third year. This fact shows that the project has created a stable community around the project. At the same time, a steady increase in total number of users has also been accomplished.

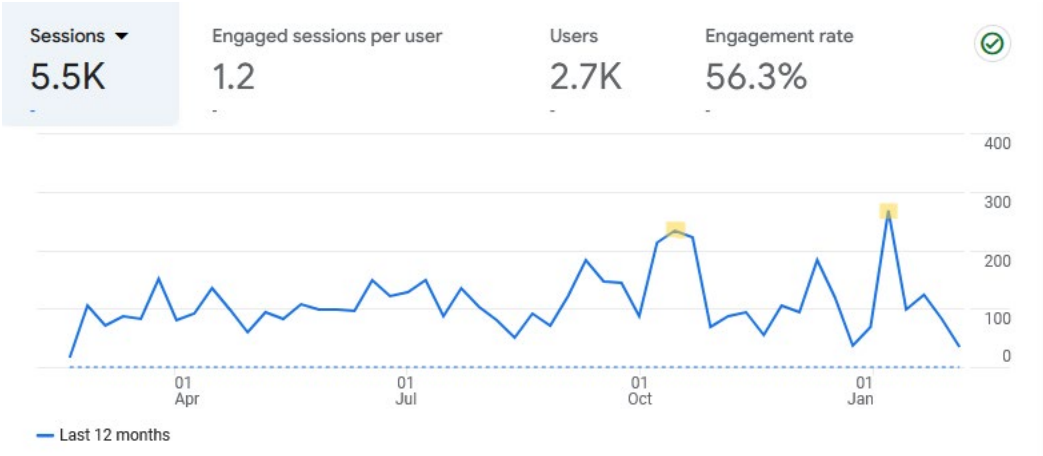


Figure 2. Number of sessions with relation to user engagement metrics in year 3. Source: Google Analytics.

Figure 2 shows various peaks that coincide with events, community workshop or trainings. In particular, the graph displays two clear peaks that correspond with the organization of two community workshops: "ESiWACE3 hackathon: HPC workflows for climate models" in 17 October 2023 and the one titled "HPC Workflows for Scientific Applications" in 10 January 2024, respectively. The other peaks in the graph also correspond to other events attended by the consortium (see Event section in this document).

Regular updates have been essential to keep the website's content fresh and relevant. This includes posting news, events, publications, and updates on project progress. In the figure below the best performing pages are the Training Events page followed by the Publications page and the Workflow Platform page. On fourth place you can also notice that event page related to the latest community workshop organized in January 2024.

The average session time ranges from two minutes to a few seconds, depending on the section of the website. It can be observed that returning visitors visit the Events & Training section more than any other, likely due to the transit generated during the events (See Figure 2). Otherwise, this metric helps to understand which pages are the most popular and how effective the internal linking has been in encouraging visitors to explore more the project website.

With regards to the visitors, most of them are from European countries such as Spain (due to the project coordinator's country), followed by US and Germany, Italy and France (Figure 3). The high engagement with the US can be due to the participation in the SC conferences series, as well as the collaboration with the Workflows Community Initiative.

	Page title and screen class	Views	Users	Views per user	Average engagement time
		1,157 100% of total	216 100% of total	5.36 Avg 0%	1m 03s Avg 0%
1	eFlows4HPC – Web site of eFlows4HPC	219	105	2.09	17s
2	Events & trainings | eFlows4HPC	137	11	12.45	2m 09s
3	Publications | eFlows4HPC	109	16	6.81	1m 17s
4	HPC workflows for scientific applications | eFlows4HPC	70	48	1.46	32s
5	Workflow platform | eFlows4HPC	65	25	2.60	1m 03s
6	Software | eFlows4HPC	59	25	2.36	18s
7	News & press releases | eFlows4HPC	52	8	6.50	1m 10s
8	Deliverables | eFlows4HPC	33	11	3.00	30s
9	Key Exploitable Results | eFlows4HPC	29	17	1.71	6s

Figure 3. Top eFlows4HPC pages in year 3. Source: Google Analytics.

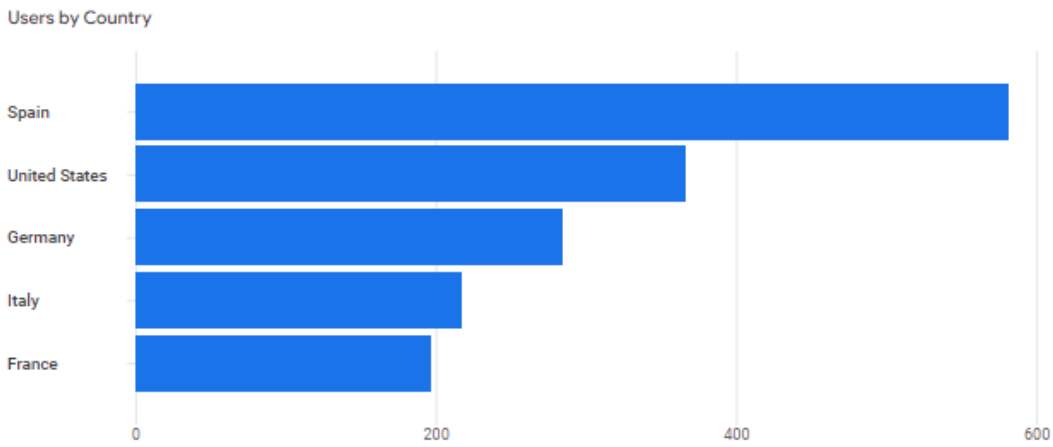


Figure 4. eFlows4HPC visitors' demographics, Jan23-Jan24. Source: Google Analytics.

4 Social Media

Eflows4HPC had two dedicated platforms LinkedIn and Twitter (now X) that have shown significant growth and engagement. Its aim was to engage with a broader audience and foster community around the eFlows4HPC project. Regular posts and updates on these platforms helped maintain interest facilitating interactions with followers and potential collaborators. WP8 aimed to generate engaging content including news, updates, event highlights, and success stories from the eFlows4HPC project, ensuring regular postings and interactions to maintain visibility and relevance in the HPC community.

4.1 Twitter

The eFlows4HPC Twitter account has served as a platform to share the project´s latest news: software releases, publication of papers, participation in events and conferences as well as the promotion of community workshop.

In 2023, the project's Twitter account counts with over 600 followers and the account got a significant increase in engagement rate as, on average, users earned 1 link clicks, 3 likes per day and 1 retweet per day. For instance, the tweet announcing the project last edition of the community workshop series titled “HPC Workflows for Scientific Applications” was the most engaging post with a total of 1299 impressions and 20 total engagements, as shown on the figure below:

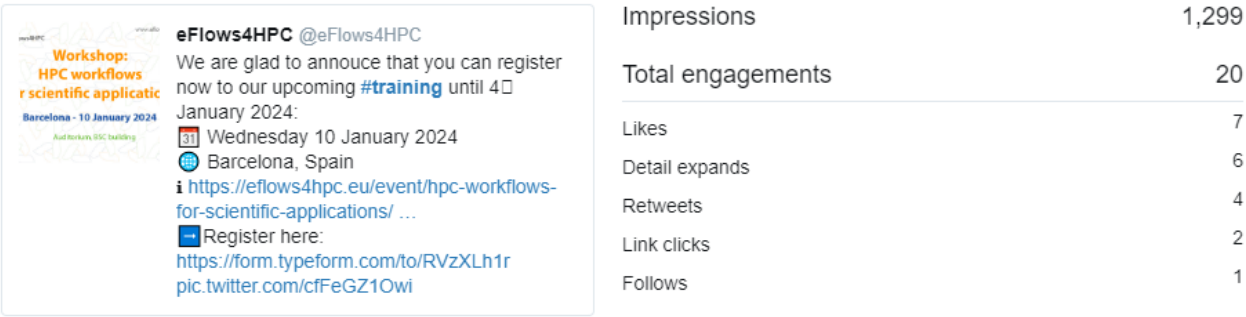


Figure 5. Top tweet with the most impressions, Jan23-Jan24. Source: Google Analytics.

Other posts that had high impressions and engagement rate were the announcement of Rosa M. Badia, eFlows4HPC coordinator as keynote speaker of the ISC2024 conference (see Figure 6) as well as the participation of eFlows4HPC on the SC23 BoF session (see Figure 7).

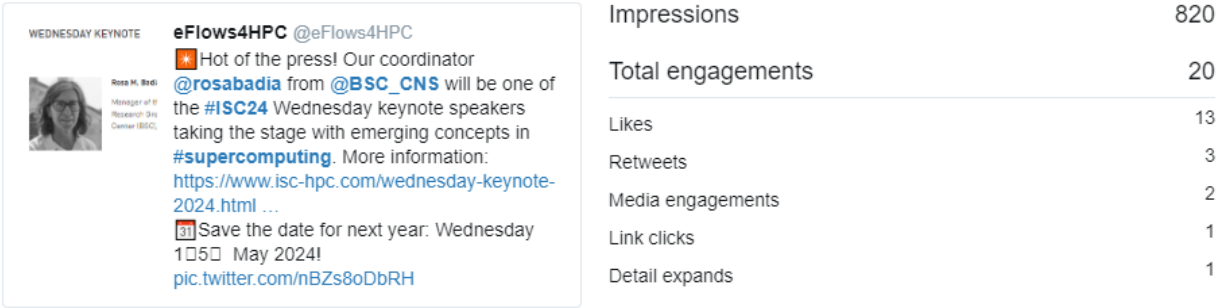


Figure 6. Second tweet with the most impressions, Jan23-Jan24. Source: Google Analytics.

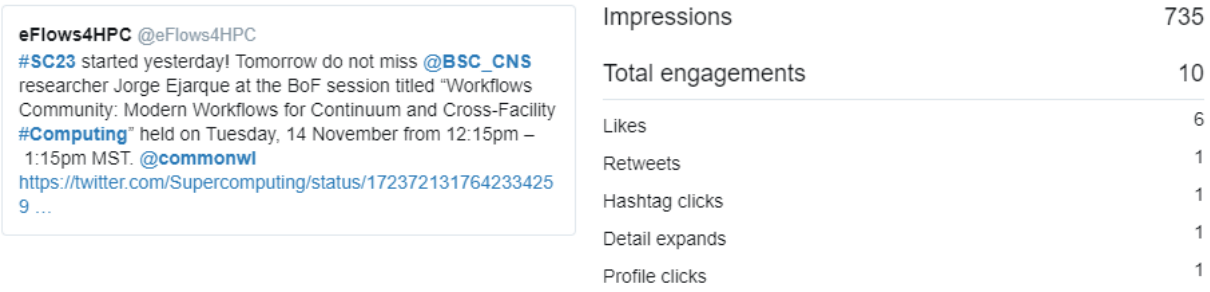


Figure 7. Third tweet with the most impressions, Jan23-Jan24. Source: Google Analytics.

4.2 LinkedIn

Similarly, our LinkedIn profile experienced growth in both followers and post impressions, underscoring the project's expanding professional network. The LinkedIn page reflects parallel growth, not only quantitative but also qualitative, reflecting the eFlows4HPC's increasing prominence in professional domains.

The account has over 300 followers, its impressions have risen by 378% in the last year, with 22K impressions noted and the average post engagement rate on LinkedIn is 9.43%. With regards to type of content that raises more interest to the LinkedIn followers, it can be highlighted that the scientific related content such as the promotion of scientific papers, community workshops news or announcements, or even event's call for abstracts.

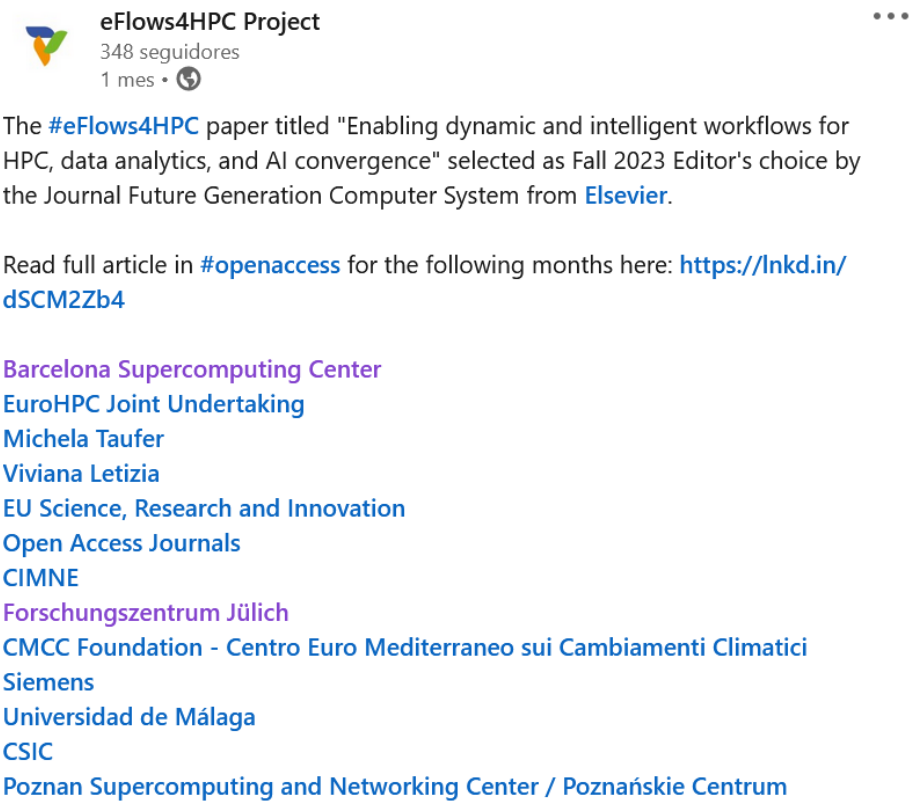


Figure 8. Highlighted LinkedIn post with 874 impressions, Jan23-Jan24. Source: LinkedIn Analytics.

Following Figure 8, one post that stands out features the eFlows4HPC paper titled "Enabling dynamic and intelligent workflows for HPC, data analytics, and AI convergence" being selected as Fall 2023 Editor's choice by the "Future Generation Computer Systems" journal from Elsevier. By utilizing the hashtag #openaccess and tagging prominent institutions, project partners and individuals associated with this research, the post leveraged the networking effect, tapping into the followers of these entities and individuals and potentially driving higher engagement rates.

With regards to the LinkedIn followers, it is worth to mention that most of them come from research services and educational institutions as well as IT services or consulting, as it is shown on the image below:

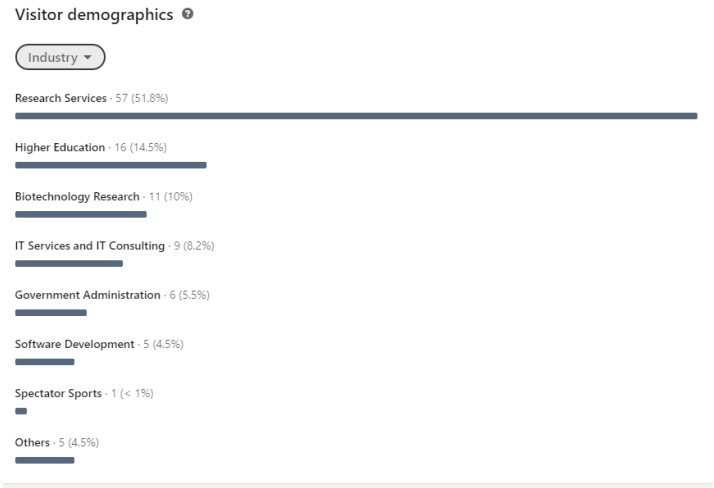


Figure 9. Visitor demographics by industry, Jan23-Jan24. Source: LinkedIn Analytics.

5 Promotional Materials

Following D8.3, the promotional materials were created in the second year and continued to be used in events such as the community workshops organized in collaboration with WP7 as well as in conferences. It has also been distributed at exhibitions such as ISC24 and MWC24, for example, to attract the attention of visitors during exhibitions.

Figure 10. eFlows4HPC promotional material.

6 Events

The eFlows4HPC partners actively participated in a total of 33 events during the complete project excluding community workshops, trainings organized by WP7 (see D7.4) as well as the participation in other training activities. This allowed the project to broaden its impact, establish new collaborations, and stay engaged with the latest developments in the field of HPC as well as the pillar scientific domains such as climate, geoscience and manufacturing or engineering. They can all be found on the Events page and summarized in the table below:

Table 1. eFlows4HPC events

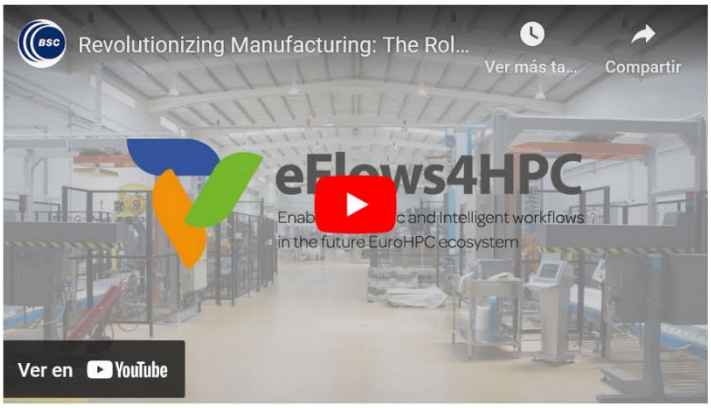
Event type	Number
Participation in workshops, conferences, exhibitions	23
Event keynotes	7
Participation in trainings	7 (excluding internal training)
Community Workshops (in collaboration with WP7)	4
Hackathon	1
Poster presentation	3

These events encompass a total of 7 keynotes, 4 community workshops (see D.7.4.), 2 webinars, 3 poster presentations and 22 events (including workshops, conferences and exhibitions), crucial for disseminating the project's breakthroughs and fostering collaborations within the HPC community. The detailed list of these events can be found on Annex I. It is important to remark that the presentation of projects results go beyond the project end in key gatherings including ISC24 and the EGU24 General Assembly where partners will continue presenting major projects results, as well as they will be implemented in other European initiatives (see D7.5 for more information on the potential exploitation of results and impact of them).

7 Videos

By the end of the project, 16 videos have been published on the eFlows4HPC YouTube playlist, offering a comprehensive visual documentation of the project's achievements, tutorials and workshops. These videos serve as an engaging medium to showcase the project's milestones, software demonstrations, and the impact of its research on the HPC and scientific community. The videos have a view average of 60 views. The most viewed video in this playlist is the one titled "Introduction to HPC workflows as a service and software stack- Overview" with 149 visualizations.

A series of success stories was also published with a dedicated page titled "Success stories" which contains three of the videos listed on the dedicated playlist. Its aim is to showcase the potential benefits for companies and researchers, and how their open-source approach enables organizations to introduce their own internal pipelines of each of the pillars of the project.



Riccardo Rossi, researcher from CIMNE, explains how their workflow management system is revolutionizing the way digital twins are created in the manufacturing industry. Discover how they leverage the expressiveness of the PyCOMPSs programming model to effectively take advantage of large-scale computing systems.

Learn about the potential benefits for companies and researchers, and how their open-source approach enables organizations to introduce their own internal pipelines. Join us as we explore the exciting possibilities for the future of digital twins in industry 4.0.

Figure 11. Success Story related to the manufacturing pillar on the eFlows4HPC website.

Scientific demos and the step-by-step guide video has been created to further disseminate the project results and outcomes. A final animated video of 2 minutes is in progress showcasing the project's results addressed to technical audience. This multimedia material will be launched together with the final press release sent to technical media outlets as well as promoted via the dedicated social media networks in the following weeks before the EC final review.

8 Press strategy

The full list of press clippings is regularly updated on the project´s website and during 2023 only the coordinator did one media appearance on a Spanish media outlet addressed to general media. Rosa Maria Badia highlighted eFlows4HPC project as "The results of traditional supercomputing simulations are combined with artificial intelligence techniques to be able to predict earthquake impact maps in a faster time or to reduce the time necessary to predict the evolution of the climate". Source in Spanish here: https://www.bbvaopenmind.com/tecnologia/inteligencia-artificial/rosa-badia-supercomputacion-ia/

A final press release highlighting the major outcomes of the project is in progress and will be launched in the following weeks before the EC final review. Once agreed with all partners, WP8 leader will launch this to HPC and scientific-technical media outlets and upload all media clippings on the project page. All press impacts will also be updated on the project website, once the final press release has been launched.

8.1 News

Following D8.3, WP8 team continued writing monthly news pieces about events that partners attend, software releases and publication of articles, that attacted lots of attention to the website and were promoted on the dedicated social media channels. One of the most successful news pieces of this last year was "An eFlows4HPC scientific paper selected as Fall 2023 Editor's Choice" as well as the SimTwins team's victory in the BSC Innovation Journey competition, led by CIMNE. This communication activity brings also added value to the project as it remarks the high potential impact of the eFlows4HPC progress results promoting entrepreneurship among the project partners.

Figure 12. CIMNE'S SimTwins wins BSC's Innovation Journey, December 2023.

9 Publications

Following the EU's open science policy, the project website on the dedicated Publications page contains the following type of publications: journal articles, conference proceedings, oral presentations and poster presentations. Over the past year, the eFlows4HPC partners have demonstrated remarkable activity in scientific publications, greatly exceeding the original Key Performance Indicator (KPI).

Firstly, the consortium members have published a total of 32 publications (27 articles in journals and 5 conference proceedings). They are all either Green or Gold Open Access, published under the CC-BY license, and include the EU acknowledgment and project number. The publication procedures and guidelines have been informed internally in order to accommodate the H2020 Open Access policy.

However, WP8 team has detected the following 6 publications that are in the process of becoming Open Access:

Table 2. eFlows4HPC publications in the process of becoming Open Access

Type	Title	Authors	Publisher
Article in Journal	Fast truncated SVD of sparse and dense matrices on graphics processors	Tomás AE, Quintana-Orti ES, Anzt H.	Sage Journals
Conference paper (under embargo until May 24)	Task-Level Checkpointing System for Task-Based Parallel Workflows	Vergés, P. and Lordan, F. and Ejarque, J. and Badia, R.M	Springer Nature, Euro-Par 2022: Parallel Processing

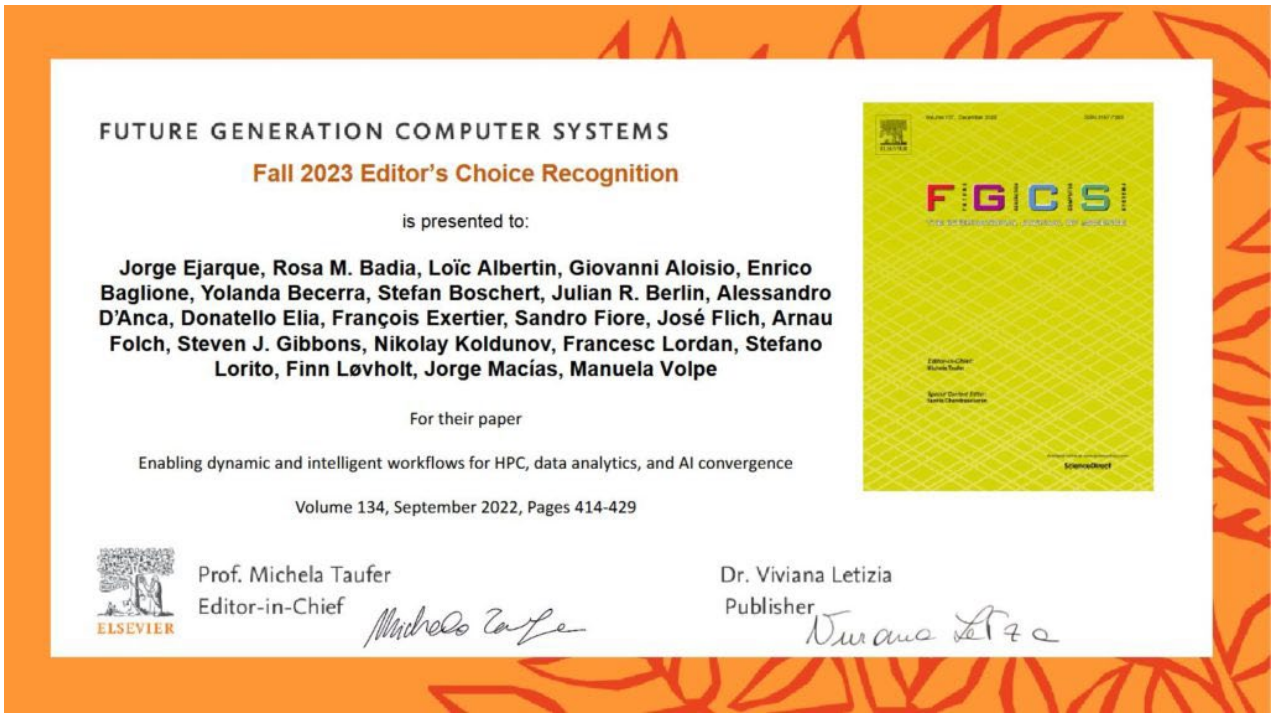
Conference paper (under embargo until August 24)	Scalable Random Forest with Data-Parallel Computing	Fernando Vázquez-Novoa, Javier Conejero, Cristian Tatu, Rosa M. Badia	Springer Nature, Euro-Par 2023: Parallel Processing
Conference proceedings	Towards Efficient Neural Network Model Parallelism on Multi-FPGA Platforms	D. R. Agut, R. Tornero and J. Flich	2023 Design, Automation & Test in Europe Conference & Exhibition (DATE)
Conference proceedings	Performance Modeling of Matrix Multiplication for Deep Learning on the Edge	Cristian Ramirez, Adrian Castello, Hector Martinez, Enrique S. Quintana-Orti	High Performance Computing. ISC High Performance 2022 International Workshops
Conference paper	GEMM-Like Convolution for Deep Learning Inference on the Xilinx Versal	Lei, J., Martínez, H., Flich, J., Quintana-Ortí, E.S.	Springer Nature

There are also two publications that have been submitted:

Table 3. Submitted eFlows4HPC publications

Type	Title	Authors	Publisher
Article in Journal	Automatic Generation of Matrix Multiplication Routines for Edge Deep Learning with TVM	Guillermo Alaejos, Adrian Castell , Pedro Alonso-Jordà, Enrique S. Quintana-Ortí	Computation and Language
Article in Journal	Machine Learning Emulation of High Resolution Inundation Maps	Steven Gibbons	Geophysical Journal International

Following the News section, it is important to highlight that the eFlows4HPC paper titled "Enabling dynamic and intelligent workflows for HPC, data analytics, and AI convergence" got selected as Fall 2023 Editor's Choice by the journal Future Generation Computer Systems in November 2023.


FUTURE GENERATION COMPUTER SYSTEMS

Fall 2023 Editor's Choice Recognition

is presented to:

Jorge Ejarque, Rosa M. Badia, Loïc Albertin, Giovanni Aloisio, Enrico Baglione, Yolanda Becerra, Stefan Boschert, Julian R. Berlin, Alessandro D'Anca, Donatello Elia, François Exertier, Sandro Fiore, José Flich, Arnau Folch, Steven J. Gibbons, Nikolay Koldunov, Francesc Lordan, Stefano Lorito, Finn Løvholt, Jorge Macías, Manuela Volpe

For their paper

Enabling dynamic and intelligent workflows for HPC, data analytics, and AI convergence

Volume 134, September 2022, Pages 414-429

ELSEVIER

Prof. Michela Taufer
Editor-in-Chief

Dr. Viviana Letizia
Publisher

Figure 13. eFlows4HPC paper selected as Fall 2023 Editor's Choice by the journal Future Generation Computer Systems, November 2023.

In the same dedicated page, WP8 team has also 7 uploaded oral presentations and 4 poster presentations. This material was promoted on social media networks generating website traffic to this page, too.

10 Key Performance Indicators (KPI's)

All dissemination activities and tasks are carefully monitored in order to measure their effectiveness. Quantitative and qualitative indicators could be as follows:

Table 4. KPI update as of M38.

Dissemination channel	Measure until project end	Status M12 (December 2021)	Status M24 (December 2022)	Status M38 (February 2024)
Scientific Publications	At least 15 publications in total	3 publications	8 publications	32 publications (2 submitted)
Academic and industrial events	At least 6 events and a booth in an industry-related event	7 events	27 events	33 events

Website	At least 5% increase in website sessions each year	The first year 1,935 sessions were obtained.	3,369 number of sessions (Jan 22 – Dec 22) 74.1% increase	5,550 sessions (Jan 23- Jan 24) 64,74% increase
Dissemination material	At least four poster presentations At least three short videos	3 videos (2 from recorded events + overview video)	2 poster presentations 3 videos (2 from recorded events + overview video)	4 poster presentations 16 videos (one final video pending)
Training courses (See D7.4 Report of the organisation of community workshops)	Three training courses One hackathon across Pillars Over 25 Hackathon attendees	1 training (without including several internal trainings)	2 trainings (without including several internal trainings) 1 hackathon across Pillars with over 25 attendees	8 Trainings 1 hackathon across Pillars with over 50 attendees
Joint community workshops (See D7.4 Report of the organisation of community workshops)	Three workshops to engage with the related community of each Pillar or one joint course for all three Pillars	n/a as these community workshops will be held during the period M30-M38	n/a as these community workshops will be held during the period M30-M38	4 workshops

11 Conclusions

The eFlows4HPC project has achieved its goals in dissemination and communication activities, significantly influencing and advancing High-Performance Computing (HPC) workflows across scientific and industrial applications in various domains. The project showcased its commitment to interdisciplinary collaboration and knowledge exchange through participation in key events, an active digital presence, and the publication of impactful research findings. By fostering a vibrant community around HPC technologies, eFlows4HPC has laid the groundwork for future innovations, contributing to Europe's leadership in HPC research and application. The effective dissemination and communication strategies have amplified the project's impact, engaged a broad audience and set the stage for ongoing advancements in the field.

Overall, the performance of the dissemination and communication part of the eFlows4HPC project has proved to be satisfactory. The numerous events, videos, website and social media visitors and engagement demonstrate the efforts made by the WP8 team to establish the project within the European HPC and scientific applications domain ecosystem.

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13 Annex I: Publications

Type of Scientific Publication	Title of the Scientific Publication	Authors	Title of the journal /or equivalent	DOI	Year of Publication
Publication in Conference Proceedings / Workshops	A Community Roadmap for Scientific Workflows Research and Development	Rafael Ferreira da Silva, Henri Casanova, Kyle Chard, Ilkay Altintas, Rosa M Badia, Bartosz Balis, Tainã Coleman, Frederik Coppens, Frank Di Natale, Bjoern Enders, Thomas Fahringer, Rosa Filgueira, Grigori Fursin, Daniel Garijo, Carole Goble, Dorran Howell, Shantenu Jha, Daniel S. Katz, Daniel Laney, Ulf Leser, Maciej Malawski, Kshitij Mehta, Loïc Pottier, Jonathan Ozik, J. Luc Peterson, Lavanya Ramakrishnan, Stian Soiland-Reyes, Douglas Thain, Matthew Wolf	2021 IEEE Workshop on Workflows in Support of Large-Scale Science (WORKS)	https://doi.org/10.1109/WORKS54523.2021.00016	2021
Publication in Conference Proceedings / Workshops	Dynamic resource allocation for efficient parallel CFD simulations	G. Houzeaux, R.M. Badia, R. Borrell, D. Dosimont, J. Ejarque, M. Garcia-Gasulla, V. López	Distributed, Parallel, and Cluster Computing (cs.DC)	https://doi.org/10.48550/arXiv.2112.09560	2021
Article in Journal	Revisiting active object stores: Bringing data locality to the limit with NVM	Alex Barceló, Anna Queralt, Toni Cortes	Future Generation Computer Systems	https://doi.org/10.1016/j.future.2021.10.025	Received 2021; Published Jan22
Article in Journal	Programming Big Data Analysis: Principles and Solutions	Loris Belcastro, Riccardo Cantini, Fabrizio Marozzo, Alessio Orsino, Domenico Talia & Paolo Trunfio	Journal of Big Data	https://doi.org/10.1186/s40537-021-00555-2	2022

Article in Journal	Enabling Dynamic and Intelligent Workflows for HPC, Data Analytics, and AI Convergence	Jorge Ejarque, Rosa M. Badia, Loïc Albertin, Giovanni Aloisio, Enrico Baglione, Yolanda Becerra, Stefan Boschert, Julian R. Berlin, Alessandro D'Anca, Donatello Elia, François Exertier, Sandro Fiore, José Flich, Arnau Folch, Steven J Gibbons, Nikolay Koldunov, Francesc Lordan, Stefano Lorito, Finn Løvholt, Jorge Macías, Fabrizio Marozzo, Alberto Michelini, Marisol Monterrubio-Velasco, Marta Pienkowska, Josep de la Puente, Anna Queralt, Enrique S. Quintana-Ortí, Juan E. Rodríguez, Fabrizio Romano, Riccardo Rossi, Jedrzej Rybicki, Miroslaw Kupczyk, Jacopo Selva, Domenico Talia, Roberto Tonini, Paolo Trunfio, Manuela Volp	Future Generation Computer Systems	https://doi.org/10.48550/arXiv.2204.09287	2022
Article in Journal	PyCOMPSs as an Instrument for Translational Computer Science	Rosa M. Badia, Javier Conejero, Jorge Ejarque, Daniele Lezzi, Francesc Lordan	Computing in Science & Engineering	10.1109/MCSE.2022.3152945	March-April 2022
Article in Journal	A BLIS-like matrix multiplication for machine learning in the RISC-V ISA-based GAP8 processor	C. Ramirez, Adrián Castelló, Enrique S Quintana-Orti	The Journal of Supercomputing	10.1007/s11227-022-04581-6	22-May
Article in Journal	Use of Neural Networks for Tsunami Maximum Height and Arrival Time Predictions	Rodríguez, J.F.; Macías, J.; Castro, M.J.; de la Asunción, M.; Sánchez-Linares, C. Use of Neural Networks for Tsunami Maximum Height and Arrival Time Predictions. *GeoHazards* **2022**, *3*, 323-344.	GeoHazards	https://doi.org/10.3390/geohazards3020017	Jun-22
Article in Journal	A memory-efficient	Rubén Zorrilla and Riccardo Rossi	Computers & Structures	https://doi.org/10.1016/j.compstruc.2022.106934	15-Jan-23

	MultiVector Quasi-Newton method for black-box Fluid-Structure Interaction coupling				
Publication in Conference Proceedings / Workshops	Convolution Operators for Deep Learning Inference on the Fujitsu A64FX Processor	Manuel F. Dolz, Héctor Martínez, Pedro Alonso, Enrique S. Quintana-Ortí	https://ieeexplore.ieee.org/xpl/conhome/9980889/proceeding	https://doi.org/10.1109	
Article in Journal	Programming Parallel Dense Matrix Factorizations for New-Generation NUMA Architectures	Sandra Catalán, Francisco D.Igual, José R.Herrero, Rafael Rodríguez-Sánchez, Enrique S. Quintana-Ortí	Journal of Parallel and Distributed Computing	https://doi.org/10.1016/j.jpdc.2023.01.004	2023 - May
Article in Journal	Multiscale modeling of prismatic heterogeneous structures based on a localized hyperreduced-order method	A. Giulidoro, J.A. HERNÁNDEZ, E. Soudah	Computer Methods in Applied Mechanics and Engineering	https://doi.org/10.1016/j.cma.2023.115913	
Article in Journal	Reformulating the Direct Convolution for High-Performance Deep Learning	Sergio Barrachina, Adrian Castello, Manuel F. Dolz, Tze Meng Low, H ector Martınez, Enrique S. Quintana-Orti, Upasana Sridharc, Andres Tomas	Journal of Systems Architecture	https://doi.org/10.1016/j.sysarc.2022.102806	2022-May

	Inference on ARM Processors				
Article in Journal	Multiscale modeling of prismatic heterogeneous structures based on a localized hyperreduced-order method	Agustina Giuliodori, Joaquín Alberto Hernández, Eduardo Soudah	Science Direct	https://doi.org/10.1016/j.cma.2023.115913	2023-March
Article in Journal	Empirical Interscale Finite Element Method (EIFEM) for modeling heterogeneous structures via localized hyperreduction	Hernandez, J.A.; Giuliodori, A.; Soudah, E.		https://doi.org/10.1016/j.cma.2023.116492	2024-January
Article in Journal	CECM: A continuous empirical cubature method with application to the dimensional hyperreduction of parameterized finite element model	J.A. Hernández, J.R. Bravo, S. Ares de Parga		https://doi.org/10.1016/j.cma.2023.116552	
Article in Journal	Pyophidia: a python library for high performance data analytics at scale. SoftwareX	Donatello Elia, Cosimo Palazzo, Sandro Fiore, Alessandro D'Anca, Andrea Mariello, Giovanni Aloisio	SoftwareX	https://doi.org/10.1016/j.softx.2023.101538	2023-October

Article in Journal	Block size estimation for data partitioning in HPC applications using machine learning techniques	Riccardo Cantini, Fabrizio Marozzo, Alessio Orsino, Domenico Talia, Paolo Trunfio, Rosa M. Badia, Jorge Ejarque & Fernando Vázquez-Novoa		https://doi.org/10.1186/s40537-023-00862-w	2023-January
Article in Journal	An Ensemble Machine Learning Approach for Tropical Cyclone Localization and Tracking From ERA5 Reanalysis Data	G. Accarino , D. Donno, F. Immorlano, D. Elia, & G. Aloisio.		https://doi.org/10.1029/2023EA003106	2023
Article in Journal	Urgent Computing for Protecting People From Natural Disasters	D. Talia and P. Trunfio		10.1109/MC.2023.3241733	2023-April
Article in Journal	Geometrically Parametrised Reduced Order Models for Studying the Hysteresis of the Coanda Effect in Finite-elements-based Incompressible Fluid Dynamics	Bravo, J. & Stabile, Giovanni & Hess, M. & Hernández, Joaquin & Rossi, R. & Rozza, Gianluigi.	Journal of Computational Physics	https://doi.org/10.48550/arXiv.2307.05227	2023
Publication in Conference Proceedings / Workshops	GEMM-Like Convolution for Deep Learning	Lei, J., Martínez, H., Flich, J., Quintana-Ortí, E.S.		https://doi.org/10.1007/978-3-031-40843-4_44	2023

	Inference on the Xilinx Versal				
Article in Journal	Enhancing iteration performance on distributed task-based workflows	Alex Barcelo and Anna Queralt and Toni Cortes		https://doi.org/10.1016%2Fj.future.2023.07.032	2023-December
Conference Proceedings	Towards Matrix Multiplication for Deep Learning Inference on the Xilinx Versal	Jie Lei, José Flich, Enrique S. Quintana-Ortí	31st Euromicro International Conference on Parallel, Distributed, and Network-Based Processing	https://doi.org/10.1109/PDP59025.2023.00043	2023-March
Conference Proceedings	Performance Modeling of Matrix Multiplication for Deep Learning on the Edge	Cristian Ramirez, Adrian Castello, Hector Martinez, Enrique S. Quintana-Orti	ISC High Performance 2022	https://dl.acm.org/doi/10.1007/978-3-031-23220-6_5	06/02/2022
Conference Proceedings	Towards Efficient Neural Network Model Parallelism on Multi-FPGA Platforms	Flich	DATE Conference	https://ieeexplore.ieee.org/document/10137117/authors#authors	
Article in Journal	An enriched finite element/level-set model for two-phase electrohydrodynamic simulations	Christian Narváez-Muñoz, Mohammad R. Hashemi, Pavel B. Ryzhakov, Jordi Pons-Prats	Physics of Fluids	https://doi.org/10.1063/5.0127274	
Publication in Conference Proceedings / Workshops	Scalable Random Forest with Data-Parallel Computing	Fernando Vázquez-Novoa, Javier Conejero, Cristian Tatu, Rosa M. Badia	Euro-Par 2023: Parallel Processing	http://dx.doi.org/10.1007/978-3-031-39698-4_27	

Conference Proceedings	Task-Level Checkpointing System for Task-Based Parallel Workflows (under embargo)	Vergés, P. and Lordan, F. and Ejarque, J. and Badia, R.M	Springer Nature	http://dx.doi.org/10.1007/978-3-031-31209-0_19	
Article in Journal	Automatizing the creation of specialized high-performance computing containers	Ejarque J, Badia RM.	The International Journal of High Performance Computing Applications	https://doi.org/10.1177/10943420231165729	
Article in Journal	Fast truncated SVD of sparse and dense matrices on graphics processors	Tomás AE, Quintana-Orti ES, Anzt H.		https://doi.org/10.1177/10943420231179 69	
Article in Journal	Sparse matrix-vector and matrix-multivector products for the truncated SVD on graphics processors	Aliaga, José I.; Anzt, Hartwig Aliaga, José I.; Anzt, Hartwig_1; Quintana-Ortí, Enrique S.; Tomás, Andrés E.		https://doi.org/10.5445/ir/1000161524	
Article in Journal	A Shape Optimization Pipeline for Marine Propellers by means of Reduced Order Modeling Techniques	Ivagnes, Anna; Demo, Nicola; Rozza, Gianluigi		10.48550/arxiv.2305.07515	

Article in Journal	Generative Adversarial Reduced Order Modelling	Coscia, Dario; Demo, Nicola; Rozza, Gianluigi		10.48550/arxiv.2305.15881	
Article in Journal	A comparison of data-driven reduced order models for the simulation of mesoscale atmospheric flow	Arash Hajisharifi; Michele Girfoglio; Annalisa Quaini; Gianluigi Rozza		10.48550/arxiv.2307.08790	
Article in Journal	Generative adversarial reduced order modelling	Coscia, D., Demo, N. & Rozza, G.		https://doi.org/10.1038/s41598-024-54067-z	
Submitted:					
Article in Journal	Automatic Generation of Matrix Multiplication Routines for Edge Deep Learning with TVM	Guillermo Alaejos, Adrian Castell , Pedro Alonso-Jordà, Enrique S. Quintana-Ortí		submitted	
Article in Journal	Machine Learning Emulation of High Resolution Inundation Maps	Steven Gibbons	Geophysical Journal International	submitted	

14 Annex I: Dissemination register

Partner	Type of activity	Details	Starting Date	Total Size Audience M13	Total Size Audience M17	Total Size Audience M38	Size of audience by type								
							Scientific Community	Industry	Civil Society	General Public	Policy Makers	Media	Investors	Customers	Others
BSC	Social Media	Twitter Followers	20/12/2020	300	404	620	100	100	20	20	20	20			20
BSC	Social Media	LinkedIn followers	21/12/2020	147	169	353	223	42			25				63
SISSA	Participation to a conference	SIMAI 2020+2021	09/01/2021	65			65								
BSC	Training	PATC: Managing distributed data with Hecuba and dataClay	28/01/2021	15			12	3							
BSC	Non-Scientific and non-peer reviewed publication	News pieces on website	18/02/2021	1000	1400	1600						2000			
BSC	Other	Press clippings	03/03/2021	10000			2000	2000	2000						
BSC	Press Clipping	LaptrinhX	04/03/2021												
BSC	Press Clipping	Computerworld	04/03/2021												

BSC	Press Clipping	HPC Wire	04/03/2021												
BSC	Press Clipping	Science Business	04/03/2021								2000	2000			
BSC	Press Release	1st PR	17/03/2021	2000			2000	2000	2000						
BSC	Press Clipping	HPC Wire	17/03/2021												
BSC	Press Clipping	Scientific Computing World	17/03/2021												
	Press Clipping	DCD	19/03/2021												
FZJ	Non-Scientific and non-peer reviewed publication	Project summary on website	23/03/2021												
UMA	Press Clipping	Punto informatico	26/03/2021												
UMA	Press Clipping	ESG Data	31/03/2021												
AWI	Participation to a conference	PASC 2021	07/05/2021	400			300	100							
BSC	Participation to a conference	ScaDL 2021	21/05/2021	100			100								

BSC	Press Clipping	HPC Wire	15/06/2021												
BSC	Press Clipping	FIB	16/06/2021												
BSC	Press Clipping	NewsBreak	16/06/2021												
INRIA	Participation to a conference	Teratec Forum 2021	23/06/2021	35			30	5							
BSC	Participation to a conference	ACM HPDC 2021	24/06/2021	100			80	20							
	Press Clipping	Digital360	08/07/2021												
UPV	Participation to a conference	HeteroPar'2021	31/08/2021	75			75								
BSC	Training	Talk Rosa M. Badia "Programming parallel codes with PyCOMPSs"	01/09/2021	30			25								
FZJ	Training	HeAT	09/09/2021	30			30								
BSC	Participation to a	GECON 2021	21/09/2021	80			80								

	conference														
CMCC	Training	Training on HPDA for climate data with the Ophidia framework	11/11/2021	15			15								
BSC	Private meeting with Inria in JLESC	SC22	16/11/2021	15			15								
BSC	Press Clipping	BarcelonaDot	24/11/2021												
BSC	Participation to a workshop	FAIRification workshop	10/12/2021	50			50								
BSC	Training	PATC: Programming Distributed Computing Platforms with COMPSs	25/01/2022												
BSC	Training	PATC: Managing distributed data with Hecuba and dataClay	27/01/2022	15			13	2							
BSC	Participation to a conference/workshop	ISC High Performance 2022	06/02/2022				40								
BSC	Participation to a conference	SIAM Conference on Parallel Processing for Scientific Computing (SIAM PP22)	26/02/2022	300			300								
BSC	Participation to a	IEEE 34th International Symposium on Computer	11/03/2022		150										

	conference (keynote speaker)	Architecture and High Performance Computing													
BSC	Presentation in meeting	SKA SRC WG5 Workshop	15/03/2022	40			40								
BSC	Presentation in conference	NAG cafe talk	16/03/2022	40			20	20							
SISSA	Participation to a conference	inVento Conference 2022	09/04/2022												
SISSA	Participation to a conference (keynoter speaker)	Second International Conference on Computational Science and Engineering (#CSE)	09/05/2022		85										
BSC	Participation to a conference /shared booth	ISC High Performance 2022	30/05/2022				40								
BSC	Poster presentation	ISC High Performance 2022	31/05/2022		300		300								
INRIA	Participation to	Teratec Forum 2022	15/06/2022			100									

	a conference														
BSC	Participation to a workshop (2 different)	HiPEAC 2022 Conference	20/06/2022		400										
BSC	Participation to a conference	ACCML 2022	22/06/2022		30		15	15							
BSC	Poster presentation	HiPEAC 2022 - EU Projects Day	22/06/2022			120	120								
BSC	Participation to a conference /workshop	MEEP Workshop on RISC-V 2022	27/06/2022	50	40		40								
CMCC	Participation to a conference/poster	The PASC22 Conference	27/06/2022		250		250								5
BSC	Participation to a workshop	3rd Workshop on RISC-V and OpenPOWER in HPC	27/6/2022		35		35								

UMA	Participation to a conference	AGITHAR General Meeting	27/06/2022												
UMA	Radio interview	CanalMalaga	28/06/2022												
UMA	Press Clipping	Confidencial newspiece	30/06/2022												
UMA	Press Clipping	COPE newspiece	07/07/2022												
UMA	Radio interview	Club5 Interview	07/07/2022												
UMA	Press Clipping	Tsunamis-Newtral	09/07/2022												
SISSA	Summer School	Reduced Order Methods in Computational Fluid Dynamics	11/07/2022		50		50								
CMCC	Participation to a conference	ESiWACE2 Second Virtual Workshop on Emerging	22/07/2022		22										
BSC	Training	Talk at ACM Summer School	31/08/2022		60		60								
BSC	Training	eFlows4HPC Hackathon	14/09/2022		50		50								
SISSA	Participation to a conference	Model Reduction and Surrogate Modeling 2022	19/09/2022												
DTOK	Participation to a conference	Keynote at Euro-Par 2022	26/09/2022		100										

BSC	Press Clipping	Article in Workflow Community initiative	29/09/2022												
UMA	Radio Interview	CanalMalaga	04/10/2022												
BSC	Participation to a conference	Ibergrid2022: Digital Twins for GEOphysical extremes	13/10/2022		58										
BSC	Participation to a conference (keynote speaker)	30th International Symposium on the Modeling, Analysis, and Simulation of Computer and Telecommunication Systems	19/10/2022		250										
BSC	Participation to a conference (keynote spekaer)	21st Symposium on Parallel and Distributed Computing (ISPDC 2022)	07/11/2022		100										
BSC	Participation to a conference/workshop	International Conference for High Performance Computing, Networking, Storage, and Analysis- SC22	14/11/2022		180										
BSC	Participation to a conference -	International Conference for High Performance Computing, Networking, Storage, and Analysis- SC23	15/11/2022		50										

	BoF session														
BSC	Participation to a conference - Panel	International Conference for High Performance Computing, Networking, Storage, and Analysis- SC24	16/11/2022		50										
BSC	Participation to a conference	Mediterranean Geosciences Union Conference	25/11/2022		100										
BSC	Participation to a conference	HiPEAC 2023	18/01/2023			300									
BSC	Participation to an event other than conference / workshop	RISC2 Webinar: Developing complex workflows that include HPC, Artificial Intelligence and Data Analytics	22/02/2023			80									
BSC	Training	Solid Earth and Geohazards in the Exascale Era - Edge-to-end data workflows	23/05/2023			100									
BSC	Participation to a conference	Poster Presentation at EuroHPC Summit	20/03/2023			300									

BSC	Participation to a conference	PDP 2023	02/03/2023			80									
BSC	Training	Tutorial in the context of ISC23	21/5/2023			100									
BSC	Training	ACM Summer school 2023	07/05/2023			60									
BSC	Organisation of a Workshop	Next-generation HPC workflows for natural hazards	13/9/2023			26	26								
BSC	Participation to a workshop	ICT days	18/4/2023			100									
BSC	Participation to an event other than conference / workshop	EGU General Assembly	24/4/2023			300									
INRIA	Trade fair	Teratec forum 2023	31/5/2023			50									
BSC	Participation to a conference	SC23 session: End-to-End Workflows for Climate Science: Integrating HPC Simulations, Big Data Processing, and Machine Learning	12/11/2023			65									

BSC	Organisation of a Workshop	Innovative HPC workflows for industry	25/10/2023			13									
BSC	Participation to a conference	Salishan Conference on High Speed Computing	25/4/2023			100									
BSC	Participation to a workshop	ESiWACE3 hackathon: HPC workflows for climate models	17/10/2023			12									
BSC	Organisation of a Workshop	HPC workflows for scientific applications	10/01/2024			33									
BSC	Participation to a workshop	HiPEAC24: CONCERTO: projeCts crOss-synergy iN advanCing Exascale platfoRms and quanTum cOmputing	17/01/2024			50									
BSC	Trade fair	MWC24	26/02/2024			100									
BSC	Organisation of a Workshop	"Advanced Workflow Strategies in High-Performance Computing for Earth Sciences" in the EGU General Assembly 2024	15/04/2024			100									
BSC	Participation to a conference	ISC24: Keynote	15/05/2024												

BSC	Other	Go with the flow – How eFlows4HPC is harnessing compute power, data analytics and AI	19/01/2023			300									
BSC	Other	Rosa Badía, gran divulgadora de la supercomputación - BDVA	25/07/2024			250									
BSC	Social Media	YouTube Playlist in BSC channel	07/02/2024			73									
BSC	Other	CIMNE'S SimTwins wins at BSC Innovation Journey	15/12/2023			15	3	15							
BSC	Non-Scientific and non-peer reviewed publication	BSC Technologies Catalogue	26/2/2023			300									
DTOK	Participation to a workshop	HPDC 2024 Tutorial	07/03/2024												
NGI	Non-Scientific and non-peer reviewed publication	Popular article on supercomputing for natural hazards (in Norwegian)	07/04/2023												

NGI	Participation to a conference	Presentation "ML Emulation of High-Resolution Inundation" at "Seismology and Artificial Intelligence" Symposium at the Institute for Advanced Studies in Frankfurt, Germany, 13-15 September 2023. (Steven J Gibbons, Erlend Briseid Storrøsten, Finn Løvholt, SG presenting)	14/9/2023		30										
NGI	Participation to a conference	Presentation "ML Emulation of High-Resolution Inundation" at "Solid Earth and Geohazards in the Exascale Era" meeting at UPC, Barcelona, Spain, 23-26 May 2023. (Steven J Gibbons, Erlend Briseid Storrøsten, Finn Løvholt, SG presenting) DOI for abstract https://doi.org/10.5194/egusphere-gc11-solidearth-10	24/05/2023												
NGI	Participation to a conference	Presentation "Site specific emulators for tsunami run-up simulations" at the 2023 EGU General Assembly, Vienna (Erlend Briseid Storrøsten, Steven J. Gibbons, Finn Løvholt, EBS presenting) DOI for abstract https://doi.org/10.5194/egusphere-egu23-7459			40										
AWI	Participation to an event other	Participation to AGU 2023	12/11/2023			100									

	than conference / workshop														
BSC	Participation to a conference	The 28TH General Assembly of the International Union of Geodesy and Geophysics 2023	17/7/23			100									
BSC	Participation to a conference	American Geophysical Union 2023 https://agu.confex.com/agu/fm23/meetingapp.cgi/Paper/1384960	12/12/2023			100									
BSC	Participation to a conference	American Geophysical Union 2023https://agu.confex.com/agu/fm23/meetingapp.cgi/Paper/1384632	13/12/2023			100									
BSC	Poster presentation	Making workflow provenance FAIR across workflow systems with Workflow Run RO-Crate	06/01/2023			119									