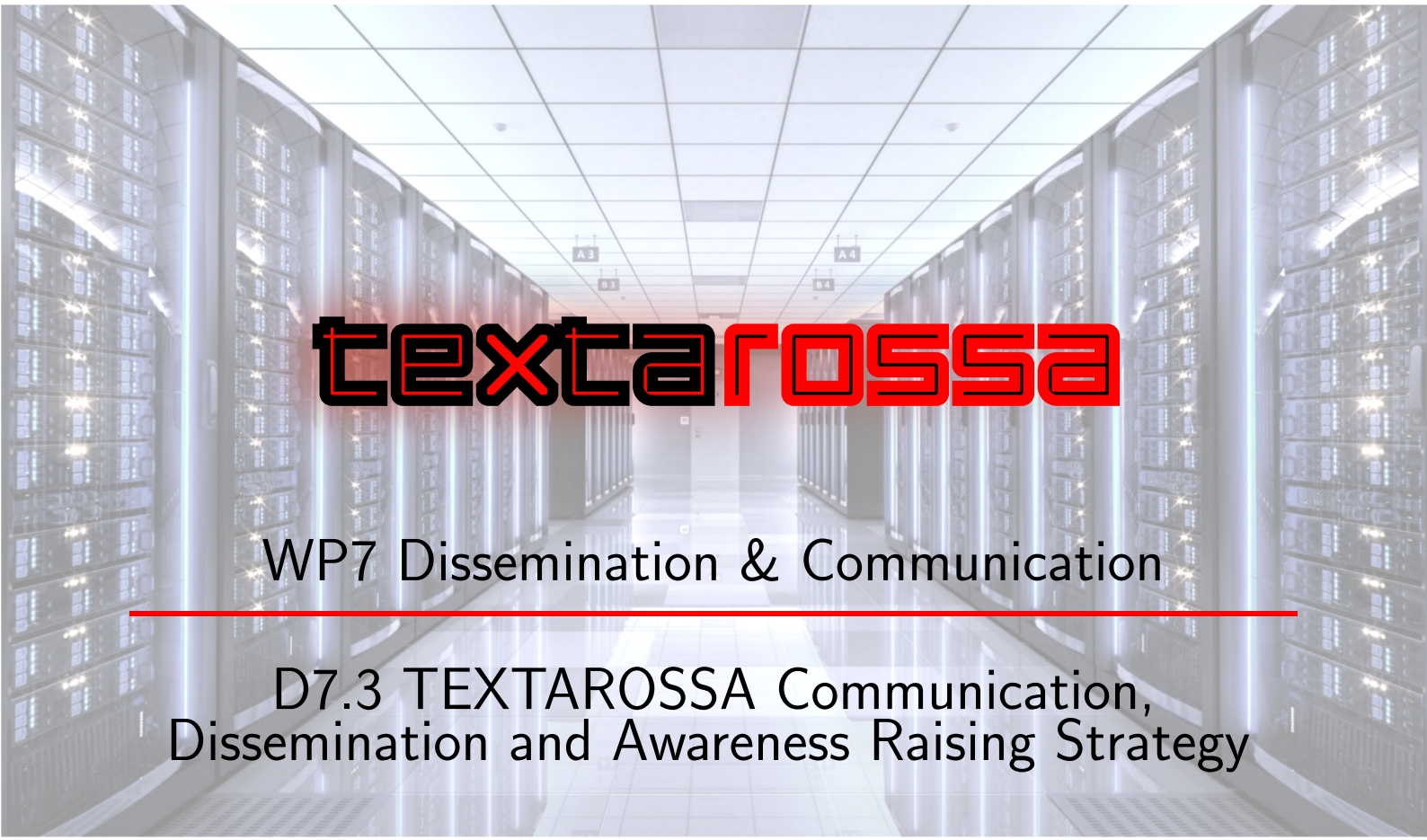
Towards EXtreme scale Technologies and Accelerators for euROhpc hw/Sw Supercomputing Applications for exascale



WP7 Dissemination & Communication

D7.3 TEXTAROSSA Communication, Dissemination and Awareness Raising Strategy

http://www.textarossa.eu

This project has received funding from the European High-Performance Computing Joint Undertaking (JU) under grant agreement no 956831. The JU receives support from the European Union's Horizon 2020 research and innovation programme and Italy, Germany, France, Spain, Poland.

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RE	Restricted to a group specified by the consortium (including the Commission Services)	
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D7.3 TEXTAROSSA Communication, Dissemination and Awareness Raising Strategy

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The partners in the project are AGENZIA NAZIONALE PER LE NUOVE TECNOLOGIE, L'ENERGIA E LO SVILUPPO ECONOMICO SOSTENIBILE (ENEA), FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V. (FHG), CONSORZIO INTERUNIVERSITARIO NAZIONALE PER L'INFORMATICA (CINI), INSTITUT NATIONAL DE RECHERCHE EN INFORMATIQUE ET AUTOMATIQUE (INRIA), BULL SAS (ATOS), E4 COMPUTER ENGINEERING SPA (E4), BARCELONA SUPERCOMPUTING CENTER-CENTRO NACIONAL DE SUPERCOMPUTACION (BSC), INSTYTUT CHEMII BIOORGANICZNEJ POLSKIEJ AKADEMII NAUK (PSNC), ISTITUTO NAZIONALE DI FISICA NUCLEARE (INFN), CONSIGLIO NAZIONALE DELLE RICERCHE (CNR), IN QUATTRO SRL (in4). Linked third parties of CINI are POLITECNICO DI MILANO (CINI-POLIMI), Università di Torino (CINI-UNITO) and Università di Pisa (CINI-UNIPI); linked third party of INRIA is Université de Bordeaux; in-kind third party of ENEA is Consorzio CINECA (CINECA); in-kind third party of BSC is Universitat Politècnica de Catalunya (UPC). The content of this document is the result of extensive discussions within the TEXTAROSSA ©Consortium as a whole.

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Contents

Executive Summary

This report documents the initial dissemination strategy set out for the TEXTAROSSA project. In particular, we have identified key stakeholder groups, and for each group we have identified the most relevant communication and dissemination channels. Furthermore, the communication strategy has been designed, driven by a SWOT analysis.

The following materials have been produced to support the TEXTAROSSA project, and have been reported in D7.1 and D7.2:

Visual Identity

Project Website

Project Social Media Accounts

Project Poster

Project Flyer

Finally, the project has produced one joint paper presenting the key TEXTAROSSA concepts which has been presented at Euromicro DSD 2021.

1 Dissemination Strategy

Disseminating the project results to relevant parties is crucial to obtain an effective exploitation of the project's outputs. To this end, we plan to increase the stakeholders' awareness of the project and the visibility of the project more broadly by using various tools. Each tool will be carefully selected to maximize the knowledge transfer to a specific group of relevant stakeholders.

1.1 Stakeholders

Stakeholder identification is critical to focus dissemination activities towards the right direction. During the proposal preparation and the first six months of the project, we have identified the following **stakeholder groups**. The following section will be periodically updated to take into account the evolution of the research scene in Europe and worldwide.

Project's consortium The project consortium includes the entities cooperating on the TEXTAROSSA project. They are mainly targeted by the *internal dissemination* activities. However, since several of the consortium partners are large-scale institutions, not all teams within a partner institution have direct access to internal dissemination tools. These teams are targeted via posters, presentations, and company-wide seminars. In particular, CINI, which is a consortium comprising more than twenty Italian universities, will perform internal dissemination to universities that are not affiliate partners within TEXTAROSSA, by leveraging and/or co-organizing a CINI-wide workshop on HPC technologies during Y2 and Y3 of the project.

Supercomputing Centre Personnel and Users Administrators and technical leaders of supercomputing centres as well as HPC users (scientists and application developers) are a primary

target of the dissemination activities. These stakeholders are addressed by targeting HPC scientific conferences that are typically attended by supercomputing centres, as well as by providing flyers and briefs covering the use cases for HPC users.

Research and academic community The research and academic community relevant to the TEXTAROSSA project is identified primarily through a set of European initiatives.

Initiative	Focus area	Contacts
High Performance and Embedded Architecture and Compilation (HiPEAC)	Academic and industrial community in HPC hardware and compilers	BSC is a member of the HIPEAC consortium; most TEXTAROSSA key personnel are members of the network
Partnership for Advanced Computing in Europe (PRACE)	Research infrastructure and related activities	BSC, PSNC, CINECA are members of PRACE
European Technology Platform for High Performance Computing ETP4HPC	Strategic agenda design for European supercomputing	BSC and CINECA are members of the ETP

To expand beyond the European audience, we identify as a relevant dissemination target the participants to major international conferences in supercomputing, high performance computing, and parallel computing, as well as the readership of major academic journals in the field.

Title	CORE Rank[1]	VQR Class[2]
ACM Transactions on Computer Systems	A+	1
IEEE Transactions on Parallel and Distributed Systems	A+	1
Journal of Parallel and Distributed Computing (Elsevier)	A+	1
ACM Transactions on Mathematical Software	A+	1
SIAM Journal on Scientific Computing	A	1
ACM Transactions on Architecture and Code Optimization	A	1
Concurrency and Computation: Practice and Experience (Wiley)	A	1
Distributed Computing (Springer)	A	1
International Journal of Parallel Programming (Springer)	A	1
Parallel Computing (Elsevier)	A	1
Future Generation Computer Systems	A	1
International Journal of High Performance Computing Applications	B	2
Journal of Supercomputing (Springer)	B	2
Parallel Processing Letters	B	3
International Journal of High Performance Computing and Networking	B	4
International Journal of Parallel, Emergent and Distributed Systems	B	4
International Journal of High Performance Systems Architecture	C	4

[1]Ranking according to the Australian CORE exercise 2010
[2]Ranking according to the Italian VQR evaluation exercise 2014

Title	CORE Rank[3]	GGS Rank[4]
HPCA	A+	1
SC	A	1
Principles and Practice of Parallel Programming	A	1
HPDC	A	2
ICS	A	2
PACT	A	2
International Conference on Parallel Processing	A	2
IEEE Cluster	A	2
IPDPS	A	2
EuroPar	A	2
DATE	B	2
IEEE HiPC	A	3
Computing Frontiers	B	3
PDCAT	B	3
HPCS	B	3
ParCo	C	3
HPCC	B	WiP
EuroMPI	C	WiP
CSE	C	WiP
Euromicro PDP	C	WiP
Euromicro DSD/SEAA	C	WiP
ISC	C	WiP
SIAM Conference on Parallel Processing for Scientific Computing (SIAMPP)	N/A	WiP
Platform for Advanced Scientific Computing (PASC)	N/A	N/A

Students Education is a key component of ensuring adoption of new technologies. Any new technology is only as easy to adopt as there is an available group of competent users and developers. Thus, specific measures will be designed to target graduate and undergraduate student audiences.

Industry While TEXTAROSSA is an advanced research project, contact with industrial sector is necessary to pave the way for future exploitation, in particular for the industrialisation and adoption of the project technologies.

1.2 Internal Dissemination

Internal dissemination activities are directed at the project's consortium. These include a suite of private tools based on the MS Sharepoint and Teams products. The software is hosted on Microsoft's servers in Europe, in a tenant dedicated to ENEA, adequately protected against unauthorized accesses and with replication to avoid loss of data.

[3]Ranking according to the Australian CORE exercise 2018
[4]Rank according to the Italian-Spanish GII-GRIN-SCIE exercise 2020

Internal periodical meetings ensure effective and smooth circulation of information, knowledge and documentation among the partners. These tools will then, ultimately, improve the cooperation among the project's partners, thus positively impacting on the success of the project as a whole.

1.3 External Dissemination

External dissemination activities are instead directed at the other target audiences listed in Section 1.1, and they aim at ensuring the visibility of the TEXTAROSSA project and at raising awareness of its results. Given the diversity of the audiences, the tools adopted will be carefully selected to maximize the chances of transferring the knowledge and the results of the project to them.

Finally, the consortium is considering to take advantage of the Horizon Results Booster to strenghten the dissemination effort.

1.3.1 Project Website

In particular, the **project website** is designed to suit the different stakeholder groups. Beyond describing the project, there will be a section dedicated to publications (this will be of interest mainly to the research and academic community), news about the project with special reference to the use cases (of interest to supercomputing centers, industry, and the general public), events and public deliverables, as well as a project poster and flyer.

As the project progress towards its research and innovation goals, the project website will be enriched with videos that will explain, in lay terms, the nature of the project and its goals (for the non-technical audience who wants to grasp the importance of the TEXTAROSSA project in their everyday life), as well as with **freely downloadable flyers specific for the use cases**.

The website is described fully in Deliverable 7.2.

1.3.2 Scientific Publications

Project partners will participate in relevant conferences, workshops, PhD forums, special sessions and trade events to transfer the knowledge about the project to the **international scientific community**. This will ensure the high visibility of TEXTAROSSA partners' work and it will foster a two-way communication with **relevant stakeholders** that can help cross-dissemination, enhance the research outputs and, ultimately, form the basis for collaborations in future cutting-edge projects.

In addition to this, project's results will be submitted for publication in relevant journals. The submission of **papers jointly written** by various project's partners is especially encouraged.

The target stated in the Grant Agreement is to achieve **5 journal publications, 15 papers at international conferences** and to plan a **book** collecting the main results of the project.

In the first months of the project, one dedicated paper jointly authored by the TEXTAROSSA technical and scientific staff has been presented at Euromicro DSD [1].

An extended version of the paper will be submitted for consideration at Microprocessors & Microsystems (Elsevier) before M12.

During the next year, the consortium will aim at presenting TEXTAROSSA at the following venues, either using the TEXTAROSSA poster or by presenting papers:

- HiPEAC 2022
- ACM Computing Frontiers 2022
- ISC High Performance 2022

Individual partners will disseminate their results at these and other conferences and journals, primarily chosen from the list identified in Section 1.1.

1.3.3 Teaching Curricula

Curricula of relevant graduate courses will be updated with the project's results. This is the most effective way to address the *students*. In particular, courses on Compiler Construction, Digital Systems Design, and High Performance Computing are the main target of this action.

The consortium's academic partners will push for the creation of new curricula specifically dedicated to High Performance Computing, providing input in the definition of such curricula, jointly with other large scale projects, such as EuroHPC EUPEX and The European Pilot, starting from M12 with the goal to start such curricula in the academic years 2022-2023 or 2023-2024.

1.3.4 Dissemination towards the Industry

Research briefings summarizing the main results of the project, with special reference to the use cases, will be created and provided to *industrial customers* of the use case providers.

Research briefings are intended to provide an overview of the impact of the project, thus supporting the exploitation of its results. These briefings will be sent to the target audiences at the end of the project and they will also be provided at workshops that will be specifically organized to inform them of the project's results. These workshops will be aimed at engaging the stakeholders in a two-way discussion on the project's aims and sustainability. The use case providers will organize these workshops during the third year of the project, possibly jointly with relevant scientific conferences and/or trade fairs.

On the industrial side, E4 will include the outcome of the TEXTAROSSA project in its standard marketing documentation, and present it to customers, prospects and users during face to face meetings and public events. E4 has an intense technical marketing activity, which it directs towards HPC centers, banking and finance industry, and cloud providers.

2 Communication

TEXTAROSSA partners believe communication activities are pivotal to make interested parties and the general public aware of the project, of its importance and of its impact on people's life. To this end, the communication plan lays out in detail how the Consortium intends to capitalize on various opportunities to make the TEXTAROSSA project known.

We plan to write **articles for the general public** interested in topics linked to the project and to publish them on journals that can reach a wide audience (e.g. The Conversation, Mondo Digitale). We will also prepare brief descriptions on crucial aspects of the research to be published on the various **newsletters** of the partners' organizations (e.g. Politecnico of Milano's newsletter that reaches mainly the general public and public organizations). When important milestones will be reached, we will prepare **press releases** and get in contact with the local press, capitalizing on the experience of the partners.

In addition to this, we will create **short explanatory videos (and related podcasts)** for the general public to be uploaded on YouTube and on the various consortium's websites as well as on the project's website. The videos will also be circulated via the social media **Twitter and Facebook accounts** that will be set up to share news about the project and about upcoming events, and to connect with relevant stakeholders. A full report of the social media setup of TEXTAROSSA is found in Deliverable 7.2

Public participation in the project will also be achieved via the participation of TEXTAROSSA partners to events such as the **European Researchers' Nights and local events for science communication**.

2.1 Communication SWOT Analysis

To design the communication strategy for TEXTAROSSA, we have performed a SWOT analysis, aiming at understanding the main forces that will affect our communication efforts. Figure 1 show the outcomes of the analysis.

The key *strength* of TEXTAROSSA from a communication perspective is the wide set of applications in high profile sectors, coupled with the expertise of the application providers in public outreach, while the main *weakness* is the lack of funding for dissemination and communication activities.

Beside these internal forces, external factors also affect the communication efforts. In particular, the renewed efforts of the EC commission to support impact, such as the Horizon Results Booster, as well as existing networking options such as HiPEAC, may provide *opportunities* to reinforce the communication strategy, although they may incur in significant access effort. However, *threats* mostly come from an oversaturated social media space, where many EU project compete for visibility.

2.2 Communication Strategy

Based on the SWOT analysis, it is possible to design a set of strategies for communication.

Strength-Opportunity This strategy aims at leveraging strengths to catch opportunities. To this end, the TEXTAROSSA partners will engage the HiPEAC Network of Excellence for communication with specialists.

Strength-Threat To counter the threat of competition for scarce public attention, TEXTAROSSA will leverage its wide range of applications, through the application providers (INFN, CNR, FHG, ENEA, INRIA, PSNC, and CINI/UNIPI) and their institutional social accounts, to achieve greater visibility on social media.

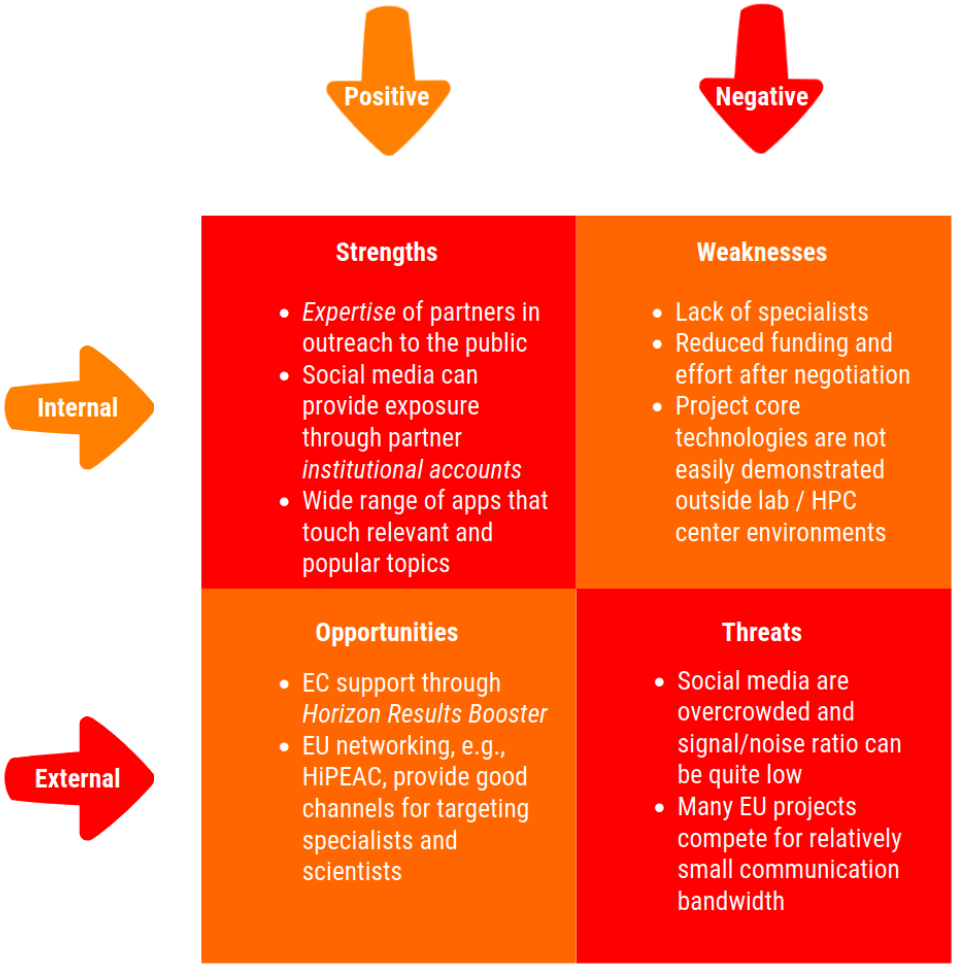


Figure 1: TEXTAROSSA communication SWOT Analysis

Weakness-Opportunity Since the project does not have a sufficient effort and budget for communication, picking up opportunities from the EC such as the Horizon Results Booster can help offsetting this weakness.

Weakness-Threat TEXTAROSSA needs to minimize the risk of low visibility due to the lack of resources and staff to keep high levels of engagement on social media.

From the above described strategies, TEXTAROSSA then developed the following concrete plans for communication:

Where TEXTAROSSA will use Twitter and Facebook.

Who Within the Consortium, CINI (POLIMI) is in charge of managing social media accounts. Dr. Federico Reghenzani of POLIMI is the social media manager for the project.

Who The target audiences for social media are (1) scientists outside the consortium and (2) the general public.

How The social media account will publish in English; this is justified because TEXTAROSSA aims at reaching a Europe-wide audience, and does not have resources to produce multi-lingual content.

How The impact will be measured in terms of engagement (likes, views, and subscriptions/followers)

What The aim is to share explanation of TEXTAROSSA goal, methodologies, and findings in plain terms that can be understood by laymen, but providing links to technical contents for experts.

What Due to resource limitations, most of the posts will cover (1) blog posts from the TEXTAROSSA website; (2) publications and presentations at events; (3) events organized or co-organized by TEXTAROSSA.

When Communication as a task covers the entire duration of the project. The initial effort has been directed to building the tools. Starting at M12, results will start appearing, but between M6 and M12, methodologies will be explained.

When Ideally, weekly communications would be desirable to maintain engagement. However, with the available resources it is possible to ensure monthly communications at most.

The social media accounts will be further managed according to the Social media guide for EU funded R&I projects.

An example of communication post is presented in Appendix A.1.

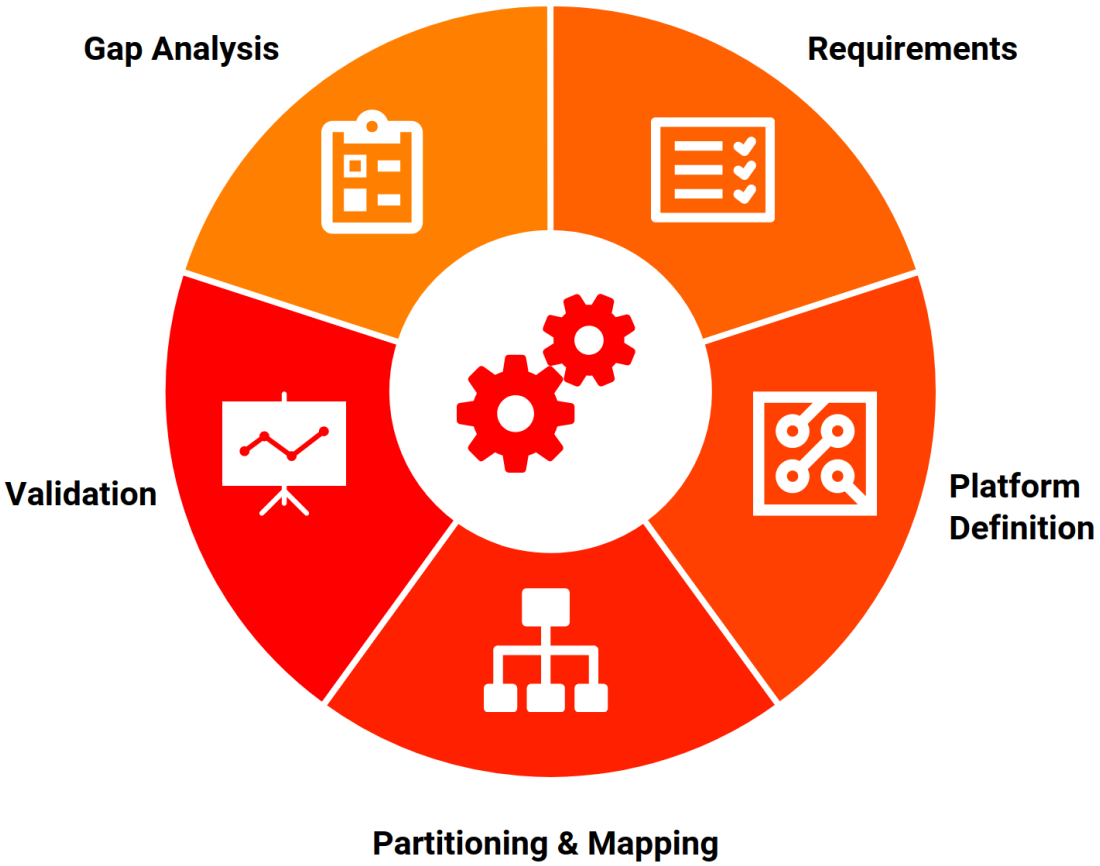
References

[1] Giovanni Agosta, Daniele Cattaneo, William Fornaciari, Andrea Galimberti, Giuseppe Massari, Federico Reghenzani, Federico Terraneo, Davide Zoni, Carlo Brandolese, Celino Massimo, et al. Textarossa: Towards extreme scale technologies and accelerators for eurohpc hw/sw supercomputing applications for exascale. In *24th Euromicro Conference on Digital System Design (DSD)*, pages 286–294. IEEE, 2021.

[2] Marco Aldinucci, Giovanni Agosta, Antonio Andreini, Claudio A Ardagna, Andrea Bartolini, Alessandro Cilardo, Biagio Cosenza, Marco Danelutto, Roberto Esposito, William Fornaciari, et al. The italian research on hpc key technologies across eurohpc. In *Proceedings of the 18th ACM International Conference on Computing Frontiers*, pages 178–184, 2021.

A Co-Design Blog Post

A.1 The TEXTAROSSA Co-Design Approach



Motivation Supercomputing offers access to enormous amounts of computational power that are needed by many applications in different scientific and industrial sectors. Public services such as weather predictions require such capabilities, as do critical industries like Oil & Gas (for fuel deposit discovery) and Pharmaceutical (for drug design). Scientific discoveries in fields such as quantum physics or high energy physics are also made possible by supercomputers.

However, increasingly powerful supercomputers are hitting a ceiling imposed by the ability to provide (and sustain) electrical power through the grid. To avoid this limitation, supercomputing hardware designers need to rely on systems that are less power-hungry, but more difficult for application designers to effectively use, due to characteristics such as *heterogeneity* (that is, the use of processing elements different from the typical "processor" that is commonly found also in laptop and desktop personal computers) and *reconfigurability* (that is, the use of systems whose functions are programmable at the hardware rather than software level).

TEXTAROSSA Contribution TEXTAROSSA aims at making the advantages of reconfigurable hardware and associated technical advances available to application developers by means of a *co-design* approach. Whereas in standard supercomputing application design, the hardware is given, and the application developer works only at creating the software application, in

co-design, hardware and software are designed together, at least in part.

TEXTAROSSA will leverage co-design, which was first developed in the context of embedded systems, through a new Integrated Development Vehicle, a hardware-software platform for supercomputing including reconfigurable hardware elements. TEXTAROSSA aims at providing tools that will help the application developer in designing and implementing the application on this type of platform, semi-automatically performing the tasks of deciding which activities will be performed on the reconfigurable hardware, and producing optimized hardware accelerators for those activities.