REliable Power and time-ConstraInts-aware Predictive management of heterogeneous Exascale systems



WP5 Dissemination and Exploitation

D5.1 RECIPE Website & Dissemination materials

http://www.recipe-project.eu



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 801137





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Duration: 36 months

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PU	Public Use	Х
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Ser-	
	vices)	
CO	Confidential, only for members of the consortium (including the Commission Ser-	
	vices)	





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Executive Summary

This report documents the initial dissemination materials produced to support the RECIPE project.

In particular, the following four items have been produced:

- **Project Website** The website acts as the centrepoint in the dissemination strategy, collecting and making available most materials.
- **Project Social Media Accounts** Facebook and Twitter accounts have been created to support the dissemination of project results and key events.
- **Project Poster** The poster provides a high-level overview of the technical goals and challenges tackled by the RECIPE project, as well as providing contact information. It is suitable for use in internal dissemination within the consortium partners, as well as external dissemination in scientific conferences.
- **Project Flyer** The flyer provides an overview of the goals and challenges tackled by RECIPE, tuned to a more generalist public, including both the general public and non-HPC specialists in academia and industry.

Furthermore, the report collects the Visual Identity document and an initial draft of material that will appear in Deliverable 5.2, which have been prepared early in order to drive the generation of the dissemination material, and are reported here in initial form to support the design decisions taken.

1 Dissemination plan

1.1 Dissemination

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, with a clear reference to the different target audiences the three use cases have.

1.1.1 Stakeholders

Stakeholder identification is critical to focus dissemination activities towards the right direction. During the proposal preparation and the first three 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 eight entities cooperating on the RECIPE project. They are mainly targeted by the internal dissemination activities.

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.

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

Initiative	Focus area	Contacts
High Performance and Em-	Academic and industrial com-	BSC is a member of the
bedded Architecture and	munity in HPC hardware and	HIPEAC consortium; most
Compilation (HiPEAC)	compilers	RECIPE key personnel are
		members of the network
Partnership for Advanced	Research infrastructure and	BSC, PSNC are members of
Computing in Europe	related activities	PRACE
(PRACE)		
European Technology Plat-	Strategic agenda design for	BSC and UPV are members
form for High Performance	European supercomputing	of the ETP
Computing ETP4HPC		

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.

RECIPE



Title	$\frac{\mathbf{CORE}}{\mathbf{Rank}^1}$	${ m VQR} { m Class}^2$
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 Architecture and Code Optimization	А	1
Concurrency and Computation: Practice and Experience (Wiley)	А	1
Distributed Computing (Springer)	А	1
International Journal of Parallel Programming (Springer)	А	1
Parallel Computing (Elsevier)	А	1
Future Generation Computer Systems	А	1
International Journal of High Performance Computing Applications	В	2
Journal of Supercomputing (Springer)	В	2
Parallel Processing Letters	В	3
International Journal of High Performance Computing and Network-	В	4
ing		
International Journal of Parallel, Emergent and Distributed Systems	В	4
International Journal of High Performance Systems Architecture	С	4
SoftwareX (Elsevier)	N/A	N/A^3

 $^1\mathrm{Ranking}$ according to the Australian CORE exercise 2010

 $^2\mathrm{Ranking}$ according to the Italian VQR evaluation exercise 2010

 3 SoftwareX had its first issue published in September 2015, whereas the Australian and Italian rankings for journals were performed in 2010. It is currently listed in the first quartile of the Scopus indices.





Title	$\frac{\mathbf{CORE}}{\mathbf{Rank}^4}$	\mathbf{GGS} \mathbf{Rank}^5
НРСА	A+	1
SC	А	1
Principles and Practice of Parallel Programming	А	1
HPDC	А	2
ICS	А	2
PACT	А	2
International Conference on Parallel Processing	А	2
IEEE Cluster	А	2
IPDPS	А	2
EuroPar	А	2
DATE	В	2
IEEE HiPC	А	3
Computing Frontiers	В	3
PDCAT	В	3
HPCS	В	3
ParCo	\mathbf{C}	3
HPCC	В	WiP
EuroMPI	\mathbf{C}	WiP
CSE	\mathbf{C}	WiP
Euromicro PDP	С	WiP
ISC	С	WiP

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 RECIPE 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.

Hospital staff As a specific stakeholder group for *UC3 Biomedical machine learning*, the hospital staff (primarily at CHUV) is a key dissemination target. As for many applications involving patients, a good understanding of the benefits provided is critical to allow the hospital staff to invest the significant amount of resources and effort necessary to implement them.

1.1.2 Internal Dissemination

Internal dissemination activities are directed at the project's consortium. These include a suite of private tools:

⁴Ranking according to the Australian CORE exercise 2018

 $^{^5\}mathrm{Rank}$ according to the Italian-Spanish GII-GRIN-SCIE exercise 2018





- the main project collaboration tool based on Phabricator;
- a repository of relevant documents ownCloud;
- a collaborative document editing based on Collabora;
- a git repository to collaborate on dissemination materials like papers and deliverables;
- several background services, e.g. LDAP for user authentication, real-time chat daemons, etc.

All these tools are open-source and consequently free of licensing charges. The software is internally hosted on Politecnico di Milano's servers, adequately protected against unauthorized accesses. To decrease the risk of data loss, the backup of the overall database and files is periodically performed on a dedicated storage unit located in a different building with respect to the datacenter facility.

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.

1.1.3 External Dissemination

External dissemination activities are instead directed at the other target audiences listed above, and they aim at ensuring the visibility of the RECIPE 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.

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 three use cases (of interest to hospital staff, 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 RECIPE project in their everyday life), as well as with three **freely downloadable flyers specific for the three use cases**.

The website is described fully in Section 2.

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 RECIPE 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 is to achieve 5 journal publications, 15 papers at international conferences and to plan a **book** collecting the main results of the project.

Curricula of relevant graduate courses will be updated with the project's results.

Three **research briefings** summarizing the main results of the project, with special reference to the three use cases, will be created and provided to industrial customers of BSC, public bodies partners of IBTS, and CHUV hospital staff respectively. These 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 be also 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.

1.2 Communication

RECIPE 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 RECIPE 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.

Public participation in the project will also be achieved via the participation of RECIPE partners to events such as the **European Researchers' Nights and local events for science communication**. The RECIPE consortium will also look into more **artistic communication projects** such as photo exhibitions, FEAT and VERTIGO.

1.3 Visual Identity

A visual identity drives the way the project presents itself to all its audiences.





For RECIPE, the design team at DEIB – Politecnico di Milano has designed a full visual identity book, which will be used to guide the production of all dissemination materials.

The full document is reported in Appendix A.

2 Website

The public website operates as the primary point of contact for all stakeholders, except the members of the project consortium. As such, it is structured to provide at a glance the key elements of the project, an overview of the nature and contents of the RECIPE activities, as well as its most recent results.

The website is based on WordPress, a free and open source content management system based on PHP and MySQL. The WordPress instance is hosted at Politecnico di Milano, guaranteeing its persistence for at least 5 years after the end of the project. The RECIPE website can be reached at http://www.recipe-project.eu.

2.1 Website structure

The website is structured around a home page, which shows the key numbers (size of partnership, progress, grant amount and number), links to the project presentations, and news, as well as a number of useful links, including social media accounts.

From the home page, it is possible to reach five pages:

- **Project Overview** presents an overview of the project goals, with key facts, goals, and partner roles. More in-depth descriptions of the work plan and the use cases are also available.
- **Consortium** provides an overview of the consortium. An individual page is provided for each partner institution.
- **Dissemination** collects all the dissemination materials: public deliverables, scientific publications, and other materials such as flyers and briefings.
- **News** provides a temporally sorted list of posts highlighting main events such as the kickoff meeting, software releases, milestones, and reports of participation to events.
- **Contacts** provides the main contact details for the coordinator, technical manager, and a contact form linked to a functional mailbox accessible by the key personnel in the coordinator institution.

A sample of the web pages is provided in the following pages.



















CONSORTIUM

The consortium of RECIPE project includes academic and industrial partners from Italy, Poland, Spain, and Switzerland:

POLITECNICO MILANO 1863	Politecnico di Milano Italy Project Coordinator
UNIVERSITAT POLITÈÇNICA DE VALÈNCIA	Universitat Politècnica de València Spain
Centro Reprincede Information Communication Technology CBICT SCIL CER ZCT	Centro Regionale Information Communication Technology Italy
Barcelona Supercomputing Center Centro Nacional de Supercomputación	Barcellona Supercomputing Center Spain
PSNC	Poznań Supercomputing and Networking Center Poland
ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE	École polytechnique fédérale de Lausanne Switzerland
ibtsolutions	IBT Solutions Italy
Centre hospitalier universitaire vaudois	Centre Hospitalier Universitaire Vaudois Switzerland

LINKS HEAP Lab Privacy Policy	HORIZON 2020 Grant nr. 801137	
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REC		HOMEPAGE	PROJECT OVERVIEW $ \sim $	CONSORTIUM	DISSEMINATION ~	NEWS	CONTACT	TS

DELIVERABLES

Public Deliverables

#	Name	WP	Due Date Month	Link
D1.9	Technology Assessment Report	WP1	36	N/A
D2.2	RECIPE Local Resource Manager Prototype	WP2	18	N/A
D2.3	RECIPE Global Resource Manager Prototype	WP2	18	N/A
D2.4	RECIPE Application Programming Interface	WP2	18	N/A
D2.5	RECIPE Integrated Software Stack	WP2	30	N/A
D3.1	State of the Art on Predictive Reliability Techniques	WP3	9	N/A
D3.2	Report on Predictive Reliability Techniques	WP3	18	N/A
D3.3	RECIPE Fault Prediction Tools	WP3	24	N/A
D3.4	RECIPE Timing Analysis Tools	WP3	24	N/A
D3.5	RECIPE Thermal Simulation Tools	WP3	24	N/A
D3.7	Runtime Resource Management Policies	WP3	36	N/A
D4.1	Report on Reconfigurable Accelerator Infrastructure Deployment	WP4	7	N/A
D4.2	Prototype Deployments	WP4	12	N/A
D4.4	Fault-tolerance and QoS support	WP4	18	N/A
D5.1	Website & Dissemination materials	WP5	3	N/A
D5.2	Dissemination Plan 1	WP5	6	N/A
D5.3	Dissemination Plan 2	WP5	18	N/A
D5.4	Dissemination Plan 3	WP5	36	N/A
D6.4	Lessons Learnt	WP6	36	N/A

LINKS

HEAP Lab Privacy Policy HORIZON 2020

Grant nr. 801137



NordPress Theme | Total by Hash Themes

















2.2 Data Analytics

The free version of Google Analytics (R) has been used to track the user experience on the public website. In particular, the tool provides us periodic reports on:

- number of unique users and session
- country and city localization of the users and their speaking language
- computer information, such as device type (desktop, mobile, etc.) and operating systems
- the navigation history and the most frequently read pages

These data can be used to periodically check the effectiveness of the website as dissemination tool of the project. Thanks to the statistics of each single page, it is possible to monitor the interest on specific topics, such as the publications list or the use-case description.

2.2.1 GDPR compliance

The General Data Protection Regulation (GDPR) is the European regulation no. 2016/679 became enforceable on May 25, 2018. We took the necessary actions to be compliant with GDPR for the information inevitably collected by the public website. An especially caution has been adopted to the data analytics tool. A privacy policy is available in the website and the users are informed of its presence via a bottom banner automatically showed at the first visit to the website. The WordPress plugin for Google Analytics has been configured to reduce the data gathered from the user, in particular to anonymize the IP address, that is considered a Personally Identifiable Information (PPI) by GDPR.

2.2.2 Report examples

We collect the first data during M3 (July 2018). The following pictures provide: (1) the statistics of users, (2) (3) the geographical information, (4) operating system and browser utilization, (5) the views per page. In the first part of the month, the most accesses are probably of partners and External Advisory Board. During the week 15 Jul – 22 Jul the project has been presented in SAMOS conference, showing an increased number of new users.







(1)



(2)





Country 2	Acquisition		Behaviour			
country T	Users 🧿 🗸	Users ? V New Users ?		Bounce Rate 🕜	Pages/Session ?	
	55 % of Total: 100.00% (55)	45 % of Total: 100.00% (45)	99 % of Total: 100.00% (99)	40.40% Avg for View: 40.40% (0.00%)	4.54 Avg for View: 4.54 (0.00%)	
1. 🚺 Italy	16 (29.09%)	10 (22.22%)	57 (57.58%)	31.58%	6.19	
2. 🔤 United States	15 (27.27%)	15 (33.33%)	16 (16.16%)	93.75%	1.69	
3. 🔽 Spain	9 (16.36%)	6 (13.33%)	11 (11.11%)	0.00%	3.36	
4. 🞽 China	3 (5.45%)	3 (6.67%)	3 (3.03%)	100.00%	1.00	
5. France	2 (3.64%)	2 (4.44%)	2 (2.02%)	0.00%	3.00	
6. 🔚 Greece	2 (3.64%)	1 (2.22%)	2 (2.02%)	50.00%	1.50	
7. 💽 Canada	1 (1.82%)	1 (2.22%)	1 (1.01%)	100.00%	1.00	
8. 🔳 Germany	1 (1.82%)	1 (2.22%)	1 (1.01%)	0.00%	3.00	
9. E Denmark	1 (1.82%)	1 (2.22%)	1 (1.01%)	0.00%	4.00	
10. 🔡 United Kingdom	1 (1.82%)	1 (2.22%)	1 (1.01%)	100.00%	1.00	

(3)

Browser 🕐		Operating System 💿 🛇	Acquisition			Behaviour		
			Users ? ↓	New Users ?	Sessions ?	Bounce Rate	Pages/Session ?	Avg. Session Duration
			55 % of Total: 100.00% (55)	45 % of Total: 100.00% (45)	99 % of Total: 100.00% (99)	40.40% Avg for View: 40.40% (0.00%)	4.54 Avg for View: 4.54 (0.00%)	00:04:29 Avg for View: 00:04:29 (0.00%)
1.	Chrome	Windows	21 (38.18%)	20 (44.44%)	21 (21.21%)	66.67%	1.67	00:00:19
2.	Chrome	Linux	7 (12.73%)	4 (8.89%)	33 (33.33%)	30.30%	7.94	00:06:36
3.	Internet Explorer	Windows	6 (10.91%)	6 (13.33%)	6 (6.06%)	100.00%	1.00	00:00:00
4.	Firefox	Windows	5 (9.09%)	5 (11.11%)	5 (5.05%)	20.00%	2.00	00:00:16
5.	Chrome	Macintosh	4 (7.27%)	2 (4.44%)	8 (8.08%)	25.00%	5.12	00:14:06
6.	Firefox	Linux	3 (5.45%)	1 (2.22%)	12 (12.12%)	25.00%	4.33	00:07:11
7.	Firefox	Macintosh	3 (5.45%)	3 (6.67%)	3 (3.03%)	0.00%	4.00	00:00:23
8.	Android Webview	Android	2 (3.64%)	2 (4.44%)	2 (2.02%)	50.00%	1.50	00:00:08
9.	Chrome	Android	2 (3.64%)	1 (2.22%)	7 (7.07%)	42.86%	2.14	00:01:28
10.	Opera	Linux	1 (1.82%)	1 (2.22%)	1 (1.01%)	0.00%	7.00	00:03:29

(4)

Page Title	Page Views	% Page Views
1. Homepage – RECIPE H2020 Project	149	33.18%
2. Work Packages – RECIPE H2020 Project	65	14.48%
3. Consortium - RECIPE H2020 Project	48	10.69%
4. External Advisory Board - RECIPE H2020 Project	44	9.80%
5. Project Overview - RECIPE H2020 Project	24	5.35%
6. News - RECIPE H2020 Project	16	3.56%
7. Universitat Politecnica de Valencia - RECIPE H2020 Project	12	2.67%
8. Contacts - RECIPE H2020 Project	11	2.45%
9. Use Cases - RECIPE H2020 Project	11	2.45%
10. Dissemination – RECIPE H2020 Project	8	1.78%

(5)





3 Social media

Social media accounts allow to reach stakeholders with news and interactions. They act as outlets for the news items which also appear on the website, and provide a way to interact with and obtain the support of other institutional accounts, such as those of the consortium partners, and those managed by the European Union entities.

3.1 Facebook

The Facebook page targets a mixed audience, primarily with photographs, infographics, and news items. During the second and third year, videos will also be promoted through this channel.







3.2 Twitter

The Twitter account targets a more technical audience than the Facebook page, mostly by leveraging the sharing effect of major accounts followed by academics, students, and industry players.

To this end, the Twitter account is followed already by the institutional accounts of BSC and of the HEAP Laboratory at Politecnico di Milano, and its first post was liked by the CORDIS account.



4 Dissemination materials

The dissemination materials are initially composed of a *poster*, suitable for printing on A0 to A2 paper, and a *flyer*, suitable for 2-side printing on A4 paper.

The *flyer* has been distributed at the 2018 International Conference on Embedded Computer Systems: Architectures, Modeling and Simulation (SAMOS XVIII).





4.1 Poster











4.2 Flyers







Reliable power and time-Constraints-aware Predictive management of heterogeneous Exascale systems

H2020-FETHPC-02-2017

What is High Performance Computing

High Performance Computing (HPC) is the class of computing that aims at achieving massively higher performance with respect to general purpose computers. As of November 2017, the most powerful supercomputer in the world is the Sunway TaihuLight, installed at the NRPCPC in China, which has the ability to perform 93x1015 floating point operations per second, i.e. to compute 93 quadrillions of operations on real numbers in that amount of time (or 10,000 times the most powerful general purpose computers). Between 2020 and 2023, it is expected that this volume will increase to 1018 (one quintillion operations per second, or "Exascale") for the top-performing HPC systems. HPC is a strategic priority for Europe, as the ability to perform such massive computations is needed for both the industrial, academic, and the public sector. HPC is employed in oil & gas for oil field discovery; in finance for forecasting market trends; in chemistry for designing new materials, drugs, and fuels; in engineering for fluid dynamics (applied in many sectors, from aerospace to heating and cooling) and for structural analysis; in metereology for we ather forecasting; in security for brute force attacks on cryptosystems; in physics for modeling fundamental principles of matter and energy; and in emerging application domains such as business intelligence, deep learning, and data analytics. Therefore, the European Union established several efforts to keep the European capacity in HPC on par with that of the other world players, including planning a Strategic Research Agenda through the European Technology Platform for High Performance computing eITP4HPC) organization.

Challenges in High Performance Computing

The complexity of Exascale HPC infrastructures is going to be vastly higher than that of current HPC systems. This is because we are reaching a point where the power supply needed to keep the HPC centers running is exceeding the capabilities of the power grid. To create more powerful, but less energy-hungry, supercomputers, we need to exploit resource heterogeneity, that is, instead of employing thousands of identical processors, we need to rely on a variety of different processing elements that will be used for specific applications. This will enable a significant power save, but will also entail a vast increase in system complexity, maxing future HPC systems unmanageable with current tools. Furthermore, as the scale of the infrastructure grows, so it does the likelihood of faults. While a single general purpose machine may run for days or months without failure, at any time there is a high probability that one processor (or other resource) out of the dozens of thousands present in a HPC system will actually fail.







What does **RECIPE** provide?

RECIPE provides the tools needed to manage heterogeneous resources in future HPC systems, including:

- a runtime resource management infrastructure optimizing energy efficiency and minimizing the occurrence
 of thermal hotspots, while enforcing the time constraints imposed by the applications, and ensuring reliability for
 both time-critical and throughput-oriented computation;
- a predictive reliability methodology to support the enforcing of QoS guarantees in face of both transient and long-term hardware failures, including thermal, timing and reliability models;
- and a set of integration layers allowing the resource manager to interact with both the application and the under lying deeply heterogeneous architecture, addressing them in a disaggregate way.

A number of disruptive goals have been identified, the more relevant are:

- 25% increase in energy efficiency;
- 15% increase in mean time to failure;
- up to 25% improvement in energy-delay product;
- 20% reduction of occurring in fault executions with recovery times compatible to real-time performance;
- full exploitation of available resources under non-saturated conditions.

Applications

The RECIPE project will assess its results against real world use cases, addressing key application domains:

- geophysical exploration: analysis of subsoil properties to locate potential oil/gas reservoirs;
- meteorology: prediction of renewable energy production from wind farms (24h forecast), analysis of sensor data for detection/prevention of flood events (within 30 minutes of event);
- biomedical machine learning and data analytics: monitor biomedical sensor data to detect epileptic seizures within 1 minute from the onset, allowing timely intervention from medical teams.

To enact this ambitious research and innovation program, the RECIPE project relies on a consortium composed of leading academic partners, including POLIMI, the largest technical university in Italy, providing expertise on resource management and programming models as well as scientific coordination; EPFL, the leading provider of thermal models for HPC; UPV, one of the key innovators in optimized interconnection networks, and CeRICT, providing expertise on accelerators; as well as two supercomputing centers: BSC, one of the leading HPC providers in Europe with the MareNostrum, classed 13th in the Top 500 in June 2017, and PSNC, another Top 500 HPC center in Poland; a research hospital from Switzerland, CHUV, and an SME active in product design and development, IBTS, which provide effective exploitation avenues through industry-based use cases.







A Visual Identity







D5.1 RECIPE Website

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Dissemination materials





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