Horizon 2020
FET HPC RIA Project #671553

ExaNeSt – European Exascale
System Interconnect and Storage
http://www.exanest.eu/

Deliverable **D7.1**

Preliminary Dissemination Report

version 1.0 – 20 Jan 2017

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REVISION HISTORY

Version	*Date*	*Description*
0.1	27 Dec 2016	Document skeleton, collection of information.
0.2	30 Dec 2016	Added Intro and summary, content
0.3	03 Jan 2017	Contributions Stage
0.4	04 Jan 2017	Combined All Contributions
0.4b	05 Jan 2017	added wiki and website stats
0.5	06 Jan 2017	Further contributions.
0.6	09 Jan 2017	Adding Full Web Stats, Twitter Stats, Wiki Stats.
0.7	15 Jan 2017	Further Contributions and Review
0.8	16 Jan 2017	Cleaned up document and appendix for submission
1.0	20 Jan 2017	Delivered to the Commission (“Public” notices, formatting)

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LIST OF ABREVIATIONS

PCB Printed Circuit Board
VOC Voice of Customer
HPC High Performance Computing
DoA Description of Action

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SUMMARY

Dissemination of research results is an extremely important part of an H2020 European funded project. Effective dissemination will ensure that the project is widely adopted and used across Europe. Project partners are all deeply aware of the need of disseminating project results to those who will use ExaNeSt to build new HPC facilities, and to scientific communities and those SMEs who may ask for and use ExaNeSt powerful platform. The dissemination activities have already encompassed printed and electronic media/publications, workshops, demos, networking, conferences and a project website. The project partners will continue to disseminate ExaNeSt results to a broad audience of data sciences and to SMEs in the emerging HPC market. All the Member States of the EU-28 as well as key non-EU markets will be targeted to ensure the widest possible uptake of the new technologies developed within the project. Existing networks and contacts will be exploited as well as industry associations, consortiums and groups. This document presents the preliminary dissemination activities (in the first 12 months) undertaken against targets set out in the DoA for the ExaNeSt H2020 project.

1. Introduction

A strong focus is given to dissemination in H2020 funded European projects in order to drive future innovation and to convert the investment done by the EU commission into socio-economic benefits for the society.
In ExaNeSt the main dissemination families are considered:

1. project website
2. printed and electronic media/publications
3. networking and conferences
4. workshops
5. demos

Dissemination activities can take the form of:

1. Internal Dissemination (Within the Project Partners)
2. Inter-Project Dissemination (Within Associated Projects)
   Eg. ExaNode and EcoScale
3. External Dissemination

The scope of this document is to present a preliminary report for the dissemination activity of the project so far (M12).
Dissemination of results is a key part of the project's innovation management and exploitation process:

a) Measuring the input from the external community (VOC) and feeding back into the project key areas for focus
b) Establishing relationships with interested parties for future exploitation opportunities

2. Project Dissemination Activity

2.1 Project Website and Social Media

www.exanest.eu

The ExaNeSt project website, wiki and logo were created in early 2016 as a portal for both internal and external dissemination activity.

2.1.1 Internal

As the primary portal for internal dissemination activity, the ExaNeSt wiki is contributed to by all partners and contains information for interaction. The wiki includes not only technical information, but live updates on dissemination and exploitation activity as well as agendas for project wide conference calls and minutes.

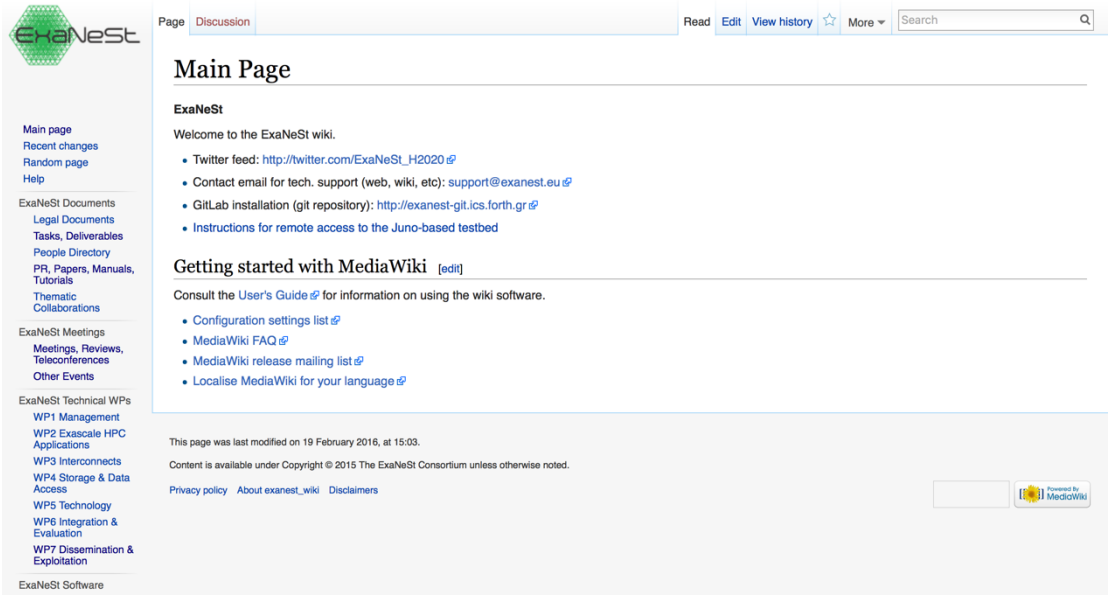

Figure 1 ExaNeSt Wiki Home Page

The ExaNeSt wiki plays a pivotal role inside the project. A total of 96 ExaNeSt members have registered in the wiki, and use it to register and disseminate to other partners their progress. During the first project year, the wiki measures 43 content pages and 479 pages in total. We have recorded more than 2600 edits in total, i.e. approximately 5.5 edits per page. These statistics validate that the wiki is used strongly by partners.

2.1.2 Inter-Project

The website and wiki are not currently used for inter-project collaboration, except for public information made accessible for other projects via the website and for internal agreement of presentations, minutes or reports relating to inter-project based activities.

2.1.3 External

The external website (www.exanest.eu) has had a strong start. Analytics installed on the site since inception have shown that since then we have had more than 10K visits to the site coming from approximately 5K unique users (See Figure 4). The website provides key project information such as a project description and a summary of project partners. It also includes a contact area which enables follow up with interested readers.

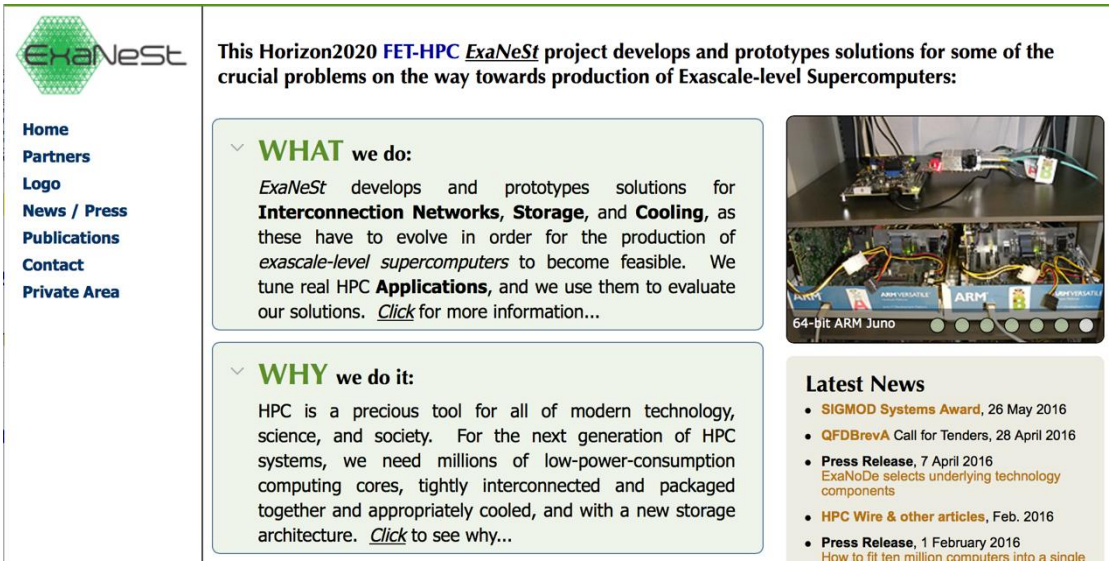

Figure 2 www.exanest.eu Home Page

The website also includes areas for the download of papers, publications, posters and slides from public dissemination results on different topic areas.

Figure 3 Public Downloads Section "Publications"

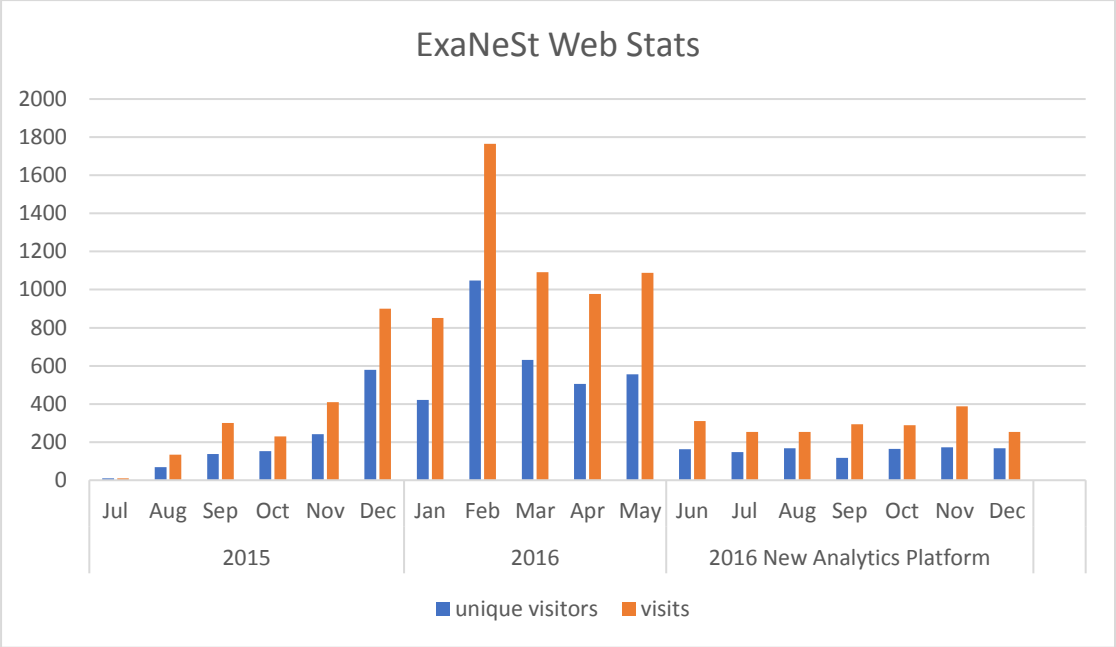

Figure 4 ExaNeSt Web Statistics (note that analytics since June 2016 are on a new platform which may excludes some search engine spiders, etc.)

The project's twitter feed can be found at https://twitter.com/exanest_h2020. It has produced 188 tweets and has 104 followers.

Figure 5 ExaNeSt Twitter Feed

2.2 Printed and Electronic Media/Publications

The project has so far leveraged both electronic and physical media, including well recognised publications.

2.2.1 Internal

Internal media is undertaken through the wiki, see website 2.1.1, emails and mailing lists are used for organising the consortia to contribute or attend.

2.2.2 Inter-Project

Inter-Project media has been produced as a result of workshops. Specifically:

- WP2 Workshop report from Trieste September 2016
- Inter-project reports and MOU from HiPEAC, Dublin, November 2016

2.2.3 External

Press releases:

- **INFN-INAF Press Release**, *22 December 2015:* A joint INFN-INAF Press Release in *Research Italy*; an interview about ExaNest topics in the monthly INFN newsletter; a Press Release (in Italian) in the INFN newsletter.
- **Project Wide Press Release**, *1st February 2016:* (In Appendix) How to fit ten million computers into a single Supercomputer? – The ExaNeSt project paves the way: European consortium becomes the trailblazer in the development of the most challenging architectures in next-generation computing. [PDF]
- **Partner Project Press Release**, *7 April 2016:* ExaNoDe selects underlying technology components: The ExaNoDe project is part of a wider group of EU funded projects as part of a strategic vision for economical, low-power approaches. Together with ExaNeSt, EcoSCALE and Mont-Blanc, which are also funded from the EU framework program for research and innovation Horizon 2020, ExaNoDe will use an ARM-based architecture as a major component of its compute nodes.
- **MDBS** Press Release *26 May 2016* - Martin Kersten receives 2016 SIGMOD Systems Award - https://www.cwi.nl/brief/2016/martin-kersten-receives-2016-sigmod-systems-award
- **MDBS** Press Release *February 2016* - CWI spin-off MonetDB Solutions helps building ExaNeSt platform - 4 https://www.cwi.nl/news/2016/cwi-spin-monetdb-solutions-helps-building-exanest-platform
- **UPV** Press Release *July 2016***.** An interview (in Spanish) about ExaNest topics in the EFE Valencia newsletter agency http://www.efe.com/efe/comunitat-valenciana/sociedad/la-upv-proyecta-un-supercomputador-con-6-millones-de-procesadores/50000880-2998821, which was distributed to many Spanish newspapers (Las Provincias, El Diario Vasco, El Confidencial, etc.)
- **EnginSoft Press Release,** *March 2016,* EnginSoft key partner in EU Exascale project – pags. 34-35 *http://www.enginsoft.it/newsletter/files/newsletter16-2.pdf*
- **EnginSoft Press Release,** *December 2016,* ExaNeSt celebrates its first birthday – *pag. 15 - http://www.enginsoft.it/newsletter/files/newsletter16-4.pdf*

Online News:

- **HPC Wire**, *24 Feb. 2016:* "EU Projects Unite on Heterogeneous ARM-based Exascale Prototype", by Tiffany Trader.
- **HPC Wire**, *24 Feb. 2016*: "BeeGFS Parallel File System Now Open Source".
- **V3 UK technology news**, *26 Feb. 2016:* "EU exascale project to create ARM-based prototype by end of the year", by Graeme Burton.
- **The Register**, *2 Feb. 2016:* "Exascale project wants machine with TEN MEEELLION ARMS", by Richard Chirgwin.

Online Blogs/Articles:

- **MDBS** - Analyse van koppelvlakken op basis van MonetDB - *6 June 2016* - online article - https://ndovloket.wordpress.com/2016/06/06/analyse-van-koppelvlakken-op-basis-van-monetdb/

Journal Submissions/Papers

- *Currently empty*

2.3 Networking and Conferences

2.3.1 Internal

See internal workshops.

2.3.2 Inter-Project

- **HiPEAC Dublin,** *2016 4th Nov*: Inter-Project networking and presentations with ExaNode and ECOscale, many ExaNeSt Partners attended

2.3.3 External

- **HPC User Forum**, *25 Sep. 2015*: In a video from the Disruptive Technologies session at the 2015 HPC User Forum, Peter Hopton from Iceotope presents: *ExaNeSt technology: Targeting Exascale in 2018*: https://www.youtube.com/watch?v=GM0hkOLOzkw
  Also reported in http://insidehpc.com/2015/09/exanest-technology-targeting-exascale-in-2018/
- **FET-HPC Projects Meeting, *30 Sep. 2015*:** A Summary of this meeting plus other news appears in the Article: *EU invests €140 million for world leadership in supercomputing technologies and applications*. The **ExaNeSt** project was presented at this meeting and the **Slides** are available here: ExaNeSt_in5min_150930pub.pdf
- **SC'15**, Austin, TX, USA, *19 Nov. 2015*: The *European Exascale Projects*, including ExaNeSt, were presented and discussed at a Bird-of-a-Feather session: see the main slides here, and the overall BoF and conclusions here.
- **HiPEAC 2016 Conference**, *Prague, Czech Republic, 18-20 January 2016*: ExaNeSt Poster. & "Challenges and Opportunities in Exascale-Computing Interconnects": Keynote Talk, given by Manolis Katevenis and Nikolaos Chrysos, at the 1st International Workshop on Advanced Interconnect Solutions and Technologies for

Emerging Computing Systems (AISTECS 2016), held in conjunction with the HiPEAC 2016 Conference.

- **HPC-TS Conference**, Trieste, Italy*, 23-25 February 2016:* Invited talk delivered by G.Taffoni on the **ExaNeSt** Project.
- **DATE'16**, Dresden, Italy, *14-18 March 2016:* ExaNeSt shared a booth with ExaNode and Euroserver, with the same ExaNeSt Poster as for HiPEAC 2016 conference
- **Friends-of-Friends**'16, Cordoba, Argentina, *30 March 2016,* Presentation by G. Murante (invited): *Simulating disk galaxies with a novel sub-grid prescription*
- **HPC Summit,** Prague *2016 May 9-13***,** Presentation by M. Katevenis (ExaNeSt FORTH), other key partners attended
- **MDBS - 32nd IEEE International Conference on Data Engineering** - *16-20 May 2016* - invited keynote - http://icde2016.fi/ICDE2016KERSTEN.pdf
- **Computational galaxy formation**, Ringberg Castle, Germany*, 10 May 2016 –* Presentation by G. Murante: "Simulating disk galaxies with a novel sub-grid prescription"
- **MDBS - 9th Extremely Large Databases Conference** - *24-26 May 2016* - Commercial meeting and sponsor - http://www-conf.slac.stanford.edu/xldb2016/
- **ISC-HPC** Frankfurt**:** *2016 June 19-23,* (ISC-HPC). Four partners participated: Iceotope (Peter Hopton), Allinea (Keeran Brabazon), exact Lab (2 people), Fraunhofer. Partners attended a workshop from ETP4HPC on the SRA and another one on EsD.
- **Teratec** Paris *2016 June 28-29*
- **MDBS - at ACM SIGMOD/PODS Conference** - *26 June-01 July 2016* - meeting and award ceremony - http://sigmod.org/sigmod-awards/people/martin-kersten-2016-sigmod-systems-award/
- **HPCS 2016 Conference,** Innsbruck, Austria 18-22 July. Paper presentation by Julio Sahuquillo (UPV). Partners Attended.
- **DSD 2016 Conference**, *31st August 2016*, Limassol, Cyprus, M. Katevenis et al.: "The ExaNeSt Project: Interconnects, Storage, and Packaging for Exascale Systems", *Special Session on European Projects*, Media:ExaNeStDSD2016.pdf
- **CHEP 2016** *2016 Oct 10-14*: (CHEP 2016), Partners Attended
- **ADASS XXVI** *2016 Oct 16-20*: (ADASS XXVI), Invited Talk by G. Taffoni, "Shall numerical astrophysics step into era of exascale computing?".
- **CAE Conference** Parma 2016 Oct 17-18: Partners Attended
- **HiPEAC Dublin,** *2016 4th Nov*: Partners attended, separate presentations by M.Katevenis (FORTH), J. Goodacre (UoM) and P. Hopton (Iceotope)
- **SC'16** Salt Lake City *2016 Nov 13-18*: (SC'16): Peter Hopton (Iceotope) gave the EXDCI birds of a feather session brief on EU HPC FET project progress, also attended, Gino Perna - EnginSoft

2.4 Workshops

2.4.1 *Internal*

- **Summer'16 Meetings, Workshops and Review** Heraklion *2016 Jun 14-17*
- **WP2 Workshop** (@INAF, Trieste), 2016 *Sep 19-20*, jointly with ExaNoDe's WP2 and EcoScale related partner(s) - see: https://www.ict.inaf.it/indico/event/449/
- **Resilience** 2016 *Oct 11, 17*: - two teleconferences

2.4.2 *Inter-Project*

- **WP2 Workshop** (@INAF, Trieste), 2016 *Sep 19-20*, jointly with ExaNoDe's WP2 and EcoScale related partner(s) - see: https://www.ict.inaf.it/indico/event/449/
- **HiPEAC Dublin,** *2016 4th Nov*: Inter-Project networking and presentations with ExaNode and ECOscale, many ExaNeSt Partners attended

2.4.3 *External*

- MDBS **Dutch Belgium DataBase Day** - 16 December 2015 - database workshop - https://www.cwi.nl/events/dutch-belgian-database-day-2015-dbdbd-2015

2.5 Demos

2.5.1 *Internal*

- **Summer'16 Meetings, Workshops and Review** Heraklion *2016 Jun 14-17:* Demonstration of Juno Prototypes to all partners

2.5.2 *Inter-Project*

No inter-project demonstrations of prototypes have yet taken place.

2.5.3 *External*

No External Demonstrations of prototypes have yet taken place.

3. Summary of Actions Against DoA Targets

The below table shows the 3yr targets set out in the DoA and the project's achievement to date in several key areas.

Item	Project 3 Yr Target	Achievement So Far (1 yr)	% Progress
Conference Presentations/Posters or Keynotes	20	19	95%
Of Which International	10	>10	100%
Journal Submissions	5	0	0%
Targeted Journal Submissions	2	0	0%
Website, Brochure, etc	Produced	Website up and active	50%
Workshops	Organised (no Target)	Regularly Organised	33%

The table demonstrates that the project is exceeding its targets, except in the area of Journal submissions, which is to be expected at this stage of the project and is expected to show improvement as more results become available for journal submission.

4. Further Plans

Conference Publications:

- A. Mouzakitis, C. Pinto, D. Raho, B. Aronis and M. Marazakis, "Lightweight and Generic RDMA Engine Para-Virtualization for the KVM Hypervisor", **submitted for publication; Joint work between VOSYS and FORTH**

Chartered Institute Data Center Group Roadshow:

- **Iceotope** is organising a UK roadshow in collaboration with the Chartered Institute for IT (The British Computer Society) on the data centre of the future, this will feature ExaNeSt architecture and the ExaNeSt program as an example of excellence.

General Continuation of Activity.

- The project consortium acknowledges the good start in dissemination activity and WP7 will continue to encourage and support dissemination activity over the next 12 month period.

5. Appendix

5.1 Press Release 1st February 2016

FOR IMMEDIATE RELEASE: Mon. 1 Feb. 2016

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How to fit ten million computers into a single Supercomputer? – The ExaNeSt project paves the way.

European consortium becomes the trailblazer in the development of the most challenging architectures in next-generation computing.

Heraklion, Crete, Greece and Sheffield, Yorks, UK

The next generation of supercomputers must be capable of a billion billion calculations per second. These are referred to as Exascale computers and with this ability to undertake such volume of calculations, they will transform our understanding of the world through advanced simulation and problem solving.

It will take ten million processors working together to achieve Exascale – the equivalent of asking ten million individuals to solve, *in a single second*, a problem that would normally take one person 3 months (about ten million seconds); so how can this be achieved?

A step towards the Exascale vision is being made by a European Consortium, funded by the Horizon2020 initiative of the EU and entitled *ExaNeSt*, which is building its first straw man prototype this year, 2016.

The Consortium consists of twelve partners, each of which has expertise in a core technology needed for innovation to reach Exascale. ExaNeSt takes the sensible, integrated approach of co-designing the hardware and software, enabling the prototype to run real-life evaluations, facilitating its scalability and maturity into this decade and beyond.

Being able to move, process and manage unprecedented volumes of data would allow greater insight into many areas of our lives including climate change, cosmology, drug design, energy safety, national security, material science, medicine and countless other scientific and engineering disciplines.

Understanding more of the world allows us to manage its future more effectively and contribute positively to the advancement of society. Current technology, however, is faced with many technical limitations in reaching an Exascale architecture. Key barriers are energy and cooling demands, compact packaging, permanent storage, interconnection, resilience and not least application behavior.

ExaNeSt addresses these using: energy-efficient ARM cores, quiet and power-efficient liquid cooling, non-volatile (e.g. flash) memories integrated into the processor fabric, and the development of innovative, fast interconnects that avoid congestion.

Manolis Katevenis, Head of Computer Architecture at **FORTH-ICS**, said: "As project coordinators, we will seek an efficient collaboration of all partners to build the prototypes – as we have done time and again in the past – because only through real, working systems can computing advance to its next stage."

Peter Hopton, Founder and CVO of **Iceotope Ltd**, commented: "Iceotope can uniquely enable the ExaNeSt project due to its 3D cooling capability - and by doing so, the Iceotope platform lends itself readily to the first, demonstrable Exascale prototype."

Allinea are providing the ARMv8 profiling and debugging tools which David Lecomber, CEO of Allinea Software added "will ensure that developers of key scientific software packages are able to exploit the potential of the system."

Likewise, Stefano Cozzini, founder and co-CEO of **eXact-lab** remarked that "eXact-lab has key expertise in developing and porting scientific packages suited to Exascale, especially those in the fields of earth and material science."

The competences of **Enginsoft** range from mechanical and structural engineering to optimization in fields such as fluid dynamics, electromagnetism, multi-physics and more. Gino Perna, Head of ICT and HPC at Enginsoft commented that "it is this simulation expertise which is most effective for innovation on this architectural scale".

"**MonetDB** Solutions brings the knowledge of more than 3 decades of database research and industrial practices to the consortium," stated Martin Kersten, Co-founder and CEO of MonetDB Solutions. "Through its open-source columnar database system MonetDB, MonetDB Solutions will showcase the applicability of the ExaNeSt platform for a broad scope of extremely compute intensive Business Intelligence and Big Data Analytics applications."

Feeding huge amounts of data efficiently in an architecture of Exascale proportions will be enabled through the core expertise of **Fraunhofer ITWM.** Bernd Lietzow of Fraunhofer noted that "Within the framework of the project, Fraunhofer ITWM

contributes to the focus area of developing a highly scalable I/O approach based on Fraunhofer's parallel file system BeeGFS as a core component."

Daniel Raho, R&D Director of **Virtual Open Systems**, said: "Thanks to ExaNeSt, Virtual Open Systems will push High Performance Computing (HPC) specific virtualization technology to the Exascale level, to enable users and maintainers to cope with the unprecedented size of the system."

Giuliano Taffoni, the project principal investigator at **INAF**, commented: "INAF's astrophysical codes will contribute to the design and testing of the network and storage infrastructure. In turn, access to ExaNest prototype resources will offer a unique opportunity for computational cosmology to execute complex simulations of our Universe with unprecedented resolution."

In terms of building high speed interconnects for the immensity of Exascale platforms, Piero Vicini, leader of the **INFN** team, said: "The ExaNeSt prototype will allow us to explore and validate innovative architectural solutions required to speed-up the execution of our large-scale scientific applications which includes a simplified model of human brain function."

A broad range of expertise in the design of communication infrastructure is also being supplied by the **University of Manchester.** Javier Navaridas, Lecturer at the University of Manchester said: "Computing systems of the magnitude confronted by ExaNeSt feature highly challenging communication demands which cannot be complied with using current off-the-self technologies, therefore we will use our core expertise to produce an efficient, high performance communication infrastructure."

Javier Marti, Director of NTC, and Julio Sahuquillo, member of the GAP research group, commented: "**UPV** will explore and analyse the proper state-to-date photonic and optical link technologies at different levels of the Exascale platform."

ExaNeSt collaborates with other European R&D projects and partners, including:

- **EuroServer,** which developed the underlying efficient communication between ARM processors;
- **ExaNoDe,** which focuses on ARM based microserver HPC computer design;
- **ECOSCALE,** which develops programmable-hardware accelerators for specialized computations;
- **Kaleao Ltd.**, which enables and produces new generation computing platforms by converging compute, storage, and networking into efficient, extremely compact, and transparent server solutions.
- **Xilinx Inc.**, providing FPGA technology and flexible high speed communication.
- **Micron Inc.,** for advanced low power memory and storage technology.

With the core technologies of its partners and collaborators, ExaNeSt is anticipated to complete its first straw man prototype in 2016, a full prototype in 2018, and will inevitably leave a trail of innovation in its path.
Visit: http://www.exanest.eu

About FORTH: FORTH is a world renowned research centre in Greece, it provides, through its Institute of Computer Science, expertise in interconnection networks, storage systems software, and prototyping.
Visit http://www.ics.forth.gr/carv

About Iceotope: Iceotope provides reliable, energy efficient liquid cooling solutions for electronics to deliver a sustainable environment.
Visit http://www.iceotope.com

About Allinea: Allinea is the leading developer of scalable development and performance analysis tools for high performance computing. Its tools are used on 80% of the world's largest supercomputers and enable scientists, researchers and engineers in research and industry to achieve better results from HPC clusters quickly and efficiently.
Visit http://www.allinea.com

About EnginSoft: EnginSoft is an Italy-based multinational consulting company, which is active in the field of Simulation-Based Engineering and Sciences (SBES).
Visit http://www.enginsoft.com

About ExactLabs: ExactLabs is an innovative start-up in the area of HPC providing advanced services for scientific computation and data management.
Visit http://www.exact-lab.it

About MonetDB Solutions: MonetDB Solutions is the technical consulting company for the open-source column-based database system MonetDB, specialised in database technologies for Business Intelligence and Big Data Analytics. In MonetDB Solutions, world-leading database researchers and engineers support software companies in developing leading edge applications addressing vertical markets, e.g., telecom, health care and education.
Visit http://www.monetdbsolutions.com

About Fraunhofer: The Fraunhofer Institute for Industrial Mathematics (ITWM) in Kaiserslautern, Germany, focuses on mathematical approaches to practical challenges like optimisation and visualisation.
Visit http://www.itwm.fraunhofer.de/en

About Virtual Open Systems: Virtual Open Systems is a France-based high-tech company active in virtualization and embedded software development. The areas of expertise through open source software development include networking and accelerators virtualization, automotive virtualized systems, security and QoS for embedded systems.
Visit: http://www.virtualopensystems.com

About INAF: INAF is the leading Italian research institute in astronomy and Astrophysics. INAF contributes to network and storage design thanks to its HPC application. INAF coordinates application related activities.
Visit: http://www.inaf.it

About INFN: INFN is one of the most influential and prestigious scientific institutions in the world, mainly engaged in research on Sub Nuclear Physics and related instruments and technologies. INFN has close collaboration with Universities along with international and national scientific institutions.
Visit: http://www.infn.it

About University of Manchester: The University of Manchester is one of the UK's top research-led universities, the APT group is well known for its million-core SpiNNaker system. The group is also working across a range of Exascale challenges and provides this consortium with wide expertise across interconnects, large-scale systems, HPC and data analytic applications and system manufacturing.
Visit: http://www.manchester.ac.uk

About UPV: UPV-GAP provides strong expertise in interconnection networks and will deliver photonic solutions for the final ExaNeSt system.
Visit: http://www.ntc.upv.es/index.html and http://www.gap.upv.es

5.2 Dissemination Summary from Interim Report

Iceotope undertook the opportunity to exhibit at SC15 (before project commencement) in order to promote the project to attendees, as a result there were several leads which are being introduced to a market scoping exercise to understand potential target markets and customer problems that can be solved by the project.

MonetDB Solutions has conducted the following dissemination related activities:

- Produced 3 bugfix releases of the MonetDB software suite (Jul2015-SP2, Jul2015-SP3, Jul2015-SP4). Disseminated in the MonetDB users community, but available world-wide.
- Participated the 32nd IEEE International Conference on Data Engineering, Helsinki, Finland, in May 2016.
- Participated 9th Extremely Large Databases Conference, California, USA, in May 2016.

UoM has been actively carrying out dissemination activities both locally among the academic community and internationally when attending conferences and other events. Some attended events worth mentioning are HiPEAC conference, PPoPP/HPCA/CGO, and the European HPC summit.

Virtual Open Systems has represented ExaNeSt on the Linaro Connect 2016 meeting in Bangkok, where the project was disseminated to attendees by showcasing a networking demo showcasing the integration of VOSYSwitch virtual network switch with ODP (Open Data Plane) on an ARMv8 platform. Enhanced inter-vm networking

based on software virtual switching is part of the work performed by VOSYS in Task 2.4

INAF members participated to two scientific congresses and gave one seminar. During these activities, the ExaNeSt project has been presented and discussed with other scientists; moreover, the congresses were partly or completely focused on numerical astrophysics, thus being of extreme interest for our project.

FORTH has been invited to give a keynote "**Challenges and Opportunities in Exascale-Computing Interconnects"** in workshop AISTECS (Advanced Interconnect Solutions and Technologies for Emerging Computing Systems) 2016, held in Pragua, Jan. 2016, where we presented some preliminary ideas on congestion management and RDMAs that we plan to use in ExaNeSt.

Allinea, **ExactLab** and **Fraunhofer** will participate to the ISC-HPC conference held in June, together with Iceotope.

INFN contributed to a joint press release with INAF

UPV members have participated in the HPCS scientific conference held in July in Innsbruck and another domestic conference. UPV has also contributed to a press release that has been distributed in more than 15 newspapers around the Spanish territory. Also, a media interview about ExaNeST to Julio Sahuquillo and Salvador Petit in RNE (Spanish National Radio) was broadcasted to the entire Spanish country.

